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New Streets: Architecturally Considered.

THE discussion as to the new street from Holborn to the Strand seems to be interminable. It has been talked of for years, and one scheme after another, official and non-official, has been promulgated, published, and criticised; yet at the present moment it hardly appears that we are nearer to the realisation of the project than we were half a dozen years ago. Reformers of London, filled with virtuous enthusiasm, are indignant at this delay, yet it may prove just as well that it has not been done in a hurry. For we are at present in a transition state of mind as to what should be arrived at in the laying out of new streets in a great city, and there are still but few who even attempt to see all sides of the subject.

Primarily, and, in the eyes of most persons (especially of the official order), secondarily and thirdly too, a new street is a channel between the houses for the purpose of giving greater accommodation to traffic, and shortening the distance from place to place. In a new city—a kind of phenomenon unknown to this country, but not unfamiliar on the other side of the Atlantic—it is a matter of common acceptance that streets should be straight, and in general at right angles to each other. The Americans lay out cities as we and the French, in the sixteenth and seventeenth centuries, laid out gardens, in symmetrical plots with straight alleys at right angles to one another; and if we now had an opportunity of laying out a new city *ab initio*, the probability is that we should do as they. For a new city is building land in the first instance, and it is matter of convenience that building should be laid out in rectangular plots; the streets are merely the space for necessary passage between them. The same was the case with the walks of the formal garden, in the days when the formal garden was the accepted method of gardening; the garden represented spaces of verdure or of flowery parterre, and the walks were the spaces for passage. The principle is nearly the same in both cases; yet it is curious that the same persons who are bent on the revival of the formal garden are mostly those who complain of the formality of new streets, and desire to have them "picturesque" and irregular. This seems inconsistent, but the reason for it is to be found in the prevalent worship of things ancient. Gardens, in a period which we now regard as an artistic one in comparison with the present, were habitually laid out in parallelograms, and the association connected with things ancient excites their sympathies in the same direction. Ancient cities, on the other hand, grew up and agglomerated by degrees, in obedience to the peculiarities of the ground and the lines of existing property boundaries, and the same antiquarian feeling which prompts the return to the formal garden, when a new garden is made, prompts the cry, when a new street is made through an old city, "respect the ancient street lines": there is a historic interest attached to them.

An essential difference between a new street made through an old city, and an original street as left in the first growth or laying out of the city, is that the former is no longer a mere hiatus or passage-way left between building plots. It has a kind of positive entity; it is a new feature introduced into the city. In the case of old streets the land built on was the important element, and determined the line of the street, which, as just now observed, was merely the necessary space between the buildings. But when a new street is introduced into an old city or an old quarter of a city, it is the street itself which becomes the primary and defining element; it is a design in itself; instead of the street being what is left between the building plots, the building plots are what is left on each side of the street; they take their chance; it is the street line which rules them, instead of the reverse. Shaftesbury-avenue is a notorious example of this; it cuts in its own way through everything. When it was first laid out, before any of the new buildings now flanking it were erected, this fact was almost ludicrously obvious. The railed-in plots, waiting to be taken up by "building owners," were of all kinds of irregular shapes, suggesting anything but a consideration for the convenience of the builders.

At a recent meeting of an artistic society well known to fame, but which keeps its meetings technically private—a privacy we shall certainly respect—it was argued by more than one speaker, in discussing this subject, that new streets ought to be made on the lines of old ones, by way of keeping up the historical landmarks of the city. This means, of course, that the old street, found inadequate to the modern traffic, should be simply widened by rebuilding the houses further back from the old frontage line. There is a fascination about the idea, and there are cases in which it might be acted upon without disadvantage, but they cannot often occur. In the first place, the setting back of the frontage line would often result in cramping the building sites too much for the requirements of new builders; and besides this, there are often cases in which the line of the old street is by no means the most convenient for the modern run of the traffic. Still, it is an idea in some cases worth bearing in mind. It would at all events avoid that entire obliteration of the ancient features of a city which renders it difficult, in the present day, even to conjecture what was the former appearance and arrangement of some parts of Paris and London.

But the cases in which this conservative method could advantageously be adopted are not many, at least in the largest class of cities. The cases are far more numerous in which the obliteration of the old streets and the re-arrangement of the whole quarter is a positive advantage. In a neighbourhood which has sunk into a bad sanitary and perhaps moral state, in which narrow winding lanes separate groups of squalid or dilapidated buildings, the driving of a new street right through them has almost a kind of purifying moral effect, or at least gives the best chance and probability of raising the character of the whole neighbourhood.

Generally speaking, then, a new street of any importance taken through a crowded district will have to ignore ancient street lines, and to go its own way. And it then becomes the question on what principle it should be laid out and architecturally treated. We have to consider the effect of the street itself, and its effect in regard to existing architectural monuments. Earlier in the century perfectly straight streets were in favour, as Victoria-street, Cromwell-road, and others testify. Recently there seems to have been a prevalent idea that streets should be laid out in a kind of slightly irregular or sinuous curve. Nothing can be worse than this; it is neither one thing nor another; it simply looks as if the street had been carelessly set out. That is the fault of the

last proposed new street from Holborn to the Strand, according to the County Council plan. It is a broken-backed street; it sets out in one direction from Holborn, and then takes a very slight bend after about one-third of its course. The line is very nearly straight, yet it loses all the dignity belonging to a straight street, without gaining any picturesqueness in return; on the plan it looks in this respect simply clumsy, as it would when constructed. A new street is an artificial construction, and has no business to pretend to be accidental. Shaftesbury-avenue is another case; not quite so bad, because it is obvious at once that a winding street was intended; the deviation from the straight line is more marked; but there is no reason or method in its setting out; it is an irregular curve "made on purpose," and will always have that appearance. An important new street should either be perfectly straight, or its deviation from the straight should be made by obvious *design*, and on geometrical lines. It may be a continuous curve of large radius; or, if one part must be at a different angle from another, the two portions should be distinctly defined and connected by a common meeting centre, such as a circus. In spite of the objection (somewhat exaggerated by some critics) that the buildings which line it cannot have perfectly square rooms, a geometrically curved street is an effect worth introducing at times, as we see in Regent's-quadrant, which has a fine effect in spite of its poor architecture, and gives all the more effect also to the straight street to which it forms the approach. But in general, a perfectly straight line in a new street is the best way of setting it out, considering architectural effect and convenience conjointly. It does not pretend to a picturesque irregularity which is obviously contrived, and it does (or may) produce dignity of effect. It may be questioned whether Haussmann has not been too much decried for his treatment of Paris. His wide straight streets and avenues undoubtedly obliterated much that was interesting and picturesque, but he did secure dignity, and it is perhaps a good deal the effect of his streets which led a well-known writer to declare that Paris was "a city," and London "a collection of villages."

The form and angle of the junction of streets is a matter of much more importance than is recognised officially in London. Junctions at acute angles are nearly always objectionable practically, as leaving a very awkward site to deal with where the streets meet; and as a matter of architectural dignity, as far as the effect of the street is concerned, there should be a well-planned joining of important streets, on an obviously carefully constructed design, not a mere running of one into the other anyhow. Nothing could be worse, for instance, than the present medley of triangular spaces and jumble of crossings at the top of Shaftesbury-avenue; and Charing Cross is as bad; there is no architectural shaping in the joining of the streets or in the space in which they meet. The effect of this carelessness is often disastrous in regard to the architecture at such points. The Grand Hotel, for instance, following the badly curved line of the street, is like a huge shapeless bulge of building; the architectural details are bad enough in any case, but the whole need not have looked so unsightly had it not been for this bad laying out of the street lines. Another case in point is the much-vaunted improvement at Hyde Park corner, where the space is cut up into irregular leg-of-mutton shapes, and the Constitution Hill arch placed on the shoulder of a curve. Such an arrangement of a site would move ridicule in Paris, but it seems quite to satisfy Londoners, and represents typically the architectural taste and perception of our national Office of Works.

Another consideration is the relation of new streets to existing architectural monuments. In cases where any monument of importance comes in the way of what would otherwise be the best line of street, this affords a good reason for divergence of the line; and indeed we have heard it suggested that the first thing in planning the line of street should be to take note of the existing buildings in the quarter which are of any architectural or historic importance, and plan the street so as to avoid interfering with them. This is certainly a far more proper frame of mind than that which has been too much exhibited of late in Paris, the tendency to sacrifice ancient monuments ruthlessly in the march of improvement. In London, however, in the neighbourhoods in which most of our new streets are projected, there is not likely to be any such wealth of architectural monuments as to embarrass the planners of the street, even if their respect for old buildings were much greater than we fear it generally is. But there is often a chance afforded of giving greater effect both to an existing building and to the new street itself, by planning the street so as to lead up to and centralise with an important building; and no opportunity of this kind should be lost sight of. Every new street should, where possible, be made the opportunity for bringing into new effect any important building to the neighbourhood of which it leads up. Often a slight alteration in the originally proposed line of a street will avail to centralise it with a large building which it would otherwise just cut into the side of, thus losing a chance of fine effect both for the building and the street. This kind of consideration used to be, up to a very recent period, utterly ignored in London. It is gratifying to observe, both in the proceedings of the London County Council and in occasional letters that we see in the daily papers, that there are some decided indications of an improved public taste in this respect, and that points of this kind are beginning at last to receive some little official and public attention. The proposal of the County Council, indeed, to bring up their new road to the flank of Gibbs's Church, was rather an unfortunate instance, as it was emphasising a view of the building which was never intended to be emphasised; but that they should have even wished to do something in the way of securing an architectural vista is an encouraging sign. Architecturally there is no doubt that the proper thing to do with the proposed new street in this respect would be to bring it out facing the centre of Somerset House, which could be done without any difficulty, and would give a new importance to the centre of Somerset House façade, while providing a dignified architectural object at the end of the street.

Lastly comes the question of the architectural treatment of the street itself—of the buildings which line it and on which its architectural character depends. The question whether the street should be regarded as an architectural whole, and the separate building-owners compelled to keep their fronts subordinate to a general design, or whether each should be at liberty to treat his building as he pleases, is one which has been often discussed, on which there have been endless differences of opinion, and in regard to which it is not easy to formulate any principle which will equally suit all cases. In the early part of the century it was generally accepted that a street should form a design as a whole, and we have Regent-street and the terraces on the east side of Regent's Park as examples of this treatment. At the present moment the sympathies of architects and artists are almost universally in favour of variety and freedom of treatment, and the reasons which may be rightly adduced, in some cases, in favour of uniform architectural treatment are ignored. Our own feeling is in favour of the theory of picturesque variety in the majority of cases, both for architectural truth and for convenience, especially where the buildings which line the streets are to be largely or entirely for trade purposes. In such a case a treatment of the elevation which suits one owner's purpose may be totally unsuitable for another. Where a street is comparatively narrow, also, the collective treatment can hardly be a success, as it cannot be seen as a whole.

Where, however, a street is of more than average width, is not very long, and is to be occupied entirely by houses of one class, and more especially where it forms an avenue up to any important building which is centralised at the end of the street, there is a great deal to be said in favour of the uniform treatment of the whole in subordination to one design, and such a treatment ought not to be inconsiderately condemned. It gives a palatial dignity to a street under such circumstances, which no other treatment can impart. Monotony in detail may be avoided by minor variations in the various houses, without destroying the general design. It is a question depending entirely on the width and position of the street, and the destination of the buildings. To employ it in Regent-street was a mistake, independently of the feeble character of the design, because the street is too long for such a treatment and does not lead up to anything in particular, architecturally speaking. To employ it in the Quadrant was perfectly right. The massing of the Regent's Park terraces, again, in symmetrical blocks, was on principle perfectly right, in a position of that kind, where they can be seen as a whole from the Park; the failure is only in the fact of the designs themselves being weak and commonplace. A square of first-class dwelling-houses, which can be seen as a whole, ought also, within certain limits as to detail, to be treated architecturally as a whole. The object of arranging dwellings round an open square is to obtain a certain grandiose and spacious effect, and this is hardly to be realised without a general symmetry of design. Architects are too apt at present to dismiss this notion of symmetrical design in streets entirely, as "untruthful" and unpicturesque, without sufficient consideration of the circumstances which may render it the most suitable and effective method. It is a question of site and other conditions, which should be taken into account in each case.

NOTES.

AT a recent meeting of the German Archæological Institute at Athens, Dr. Dörpfeld expounded his theory that the Greek building laid bare between the sanctuary of Dionysos in the Marshes and the Amyneion is none other than the ancient Prytaneion of Athens. He had long thought from its extent and the excellence of its masonry, that the building could not be merely a private house. Special interest attached to it, moreover, from its beautiful pavement, one of the earliest examples of Greek mosaic extant. We described this pavement in our issue of Sept. 7, 1895 (page 165), but at that date Dr. Dörpfeld had not pronounced any definite opinion as to the purport of the structure. Pausanias (I., 183) describes a Prytaneion, and as he has just passed the precinct of Aglaïtos, the Prytaneion he saw must have been north, not west, of the Acropolis. This Prytaneion was not, however, as even so conservative an authority as Professor Curtius allows, the primitive hearth of Athens, but a Roman foundation, to which some relics of the eastern city had been transferred, with a transcript of the laws of Solon on one tablet. If Dr. Dörpfeld's conjecture be correct, a point in the topography is established, for near the ancient Prytaneion must be the Boukolion, where the archon Basileus held his Court, and the Bouzygion, the primitive ploughing place of Athens, and most important of all, the ancient agora (ἡ ἀρχαῖα ἀγορά). Money has been privately subscribed to continue the excavations both at this point and also to the

east of the so-called Theseion, where, it is hoped, that the Stoa Baseleios will come to light.

A FEATURE of Mr. Ritchie's Light Railways Bill (which passed the second reading on Monday) is the creation of a Commission for the special purpose of conducting local inquiries and reporting to the Board of Trade. It had, from the first, been recognised that one of the prime essentials to the success of any scheme of this nature lay in the avoidance of the expensive Parliamentary formalities which have done so much to unduly inflate the cost of our existing railway systems, and the Board of Trade are to be empowered to confirm any order which the Commission may deem it expedient to make. There would therefore appear to be some more work and yet more responsibility in store for the energetic Department in question. Monday's debate mainly turned upon the financial proposals, to which we alluded last week. There was but little serious opposition to the Second Reading, Mr. Bryce—whose own Light Railways Bill came to such an untimely end—pronouncing the measure a fair case for experiment, though criticising some of its details. It has been argued that for the trunk lines to obtain the benefit of through long-distance traffic, the standard national gauge must be adopted on the light lines. This, and other matters of detail, will be well thrashed out later on, but it may be remarked that for the trunk lines to get the full benefit of connection with these "feeders" it would seem to be necessary for the rolling-stock to be of standard strength as well as standard gauge. For if the light line wagons were not up to the Board of Trade requirements in this respect they could not be attached to main-line trains; and, transhipment being thus unavoidable, uniformity of gauge would be, to a certain extent, immaterial. But the manifest advantages of uniformity, where local conditions permit of it, will naturally tend to prevent variation.

ABOUT three years ago the City of New York announced an extended competition for a great city hall, and offered a series of valuable prizes, the first being the construction of the building. Opposition to the placing of the new building on the proposed site of the present City Hall Park having been aroused, an Act of the Legislature permitting the use of this land for this purpose was repealed. This action, however, did not take place until after the plans submitted in competition had been sent in. Many vexatious delays followed, including one or two legal actions to compel the city to carry out its previously-announced intention of holding a competition and awarding the prizes. Finally, a Bill was passed at the last Session of the Legislature appropriating the sum of 17,000 dols. to be paid as prizes in the matter, on the payment of which the whole matter would be ended, the proposed site being no longer available for building purposes. The awards of the prizes have just been made, the first prize, of 7,000 dols., being given to Mr. J. R. Thomas, of New York, and the others, of 2,000 dols. each, to E. P. Casey, New York; Rankin & Kellogg, Philadelphia; Gordon, Bragdon, & Orchard, Rochester, New York; Ernest Flagg, New York; and P. D. Weber, Chicago. Though it is an open secret that many well-known architects entered this competition, Mr. Flagg alone, among the prize winners, has done much important work. Mr. Thomas, who wins the first prize, has built a couple of armories in New York. This is the second competition for a municipal building in New York which has ended in a failure.

THE new Mairie for the XIIth Arrondissement, at Paris, was formally opened on February 28, in presence of the President of the Republic. The new building is nearly on the site of the former Mairie, at the angle of the Faubourg St. Martin and Rue Château d'Eau. It is completely isolated from the neighbouring houses, and forms one of the best recent examples of municipal architecture in Paris. The architect, M. Rouyer, has evidently found the irregular shape of the site suggestive for architectural effect and grouping, The different departments of the public service are arranged round a large central hall, which is connected by a staircase, somewhat recalling that of the old Hotel de Ville, with the reception rooms on the first floor. In one of these rooms is a fine piece of sculpture in high relief, by M. Dalou, representing the Triumph of the Republic. The exterior decoration of the building is in a refined style of Renaissance detail. The architect is considered to have well earned the official compliment of the Cross of the Legion of Honour, which the President personally conferred upon him on the occasion of the opening of the building.

THE report of Mr. T. G. Jackson as to his work on the tower of St. Mary's, Oxford, which has been published in full in the *Oxford University Gazette*, gives the record of a piece of repair, and to some extent unavoidable restoration, carried out with great practical care and critical judgment. To the whole case of the tower and the vicissitudes through which it has gone we have before referred at some length. For the upper part of the pinnacles, as Mr. Jackson observes, there was no authority, the original work having been already displaced by Buckler's restoration in 1848-50, which had in its turn gone to ruin; these Mr. Jackson has replaced with a design which at all events more recalls what some can remember of the aspect of the tower in its earlier days. The description of the state in which the ancient sculpture was found to be shows that for the most part nothing could have been done to save the figures; in fact, leaving them where they were would have been exceedingly dangerous. Mr. Jackson's Report concludes—

"The stone used throughout has been the hardest bed of the Clipsham quarries in Rutland, except the cap-stone and a few courses near it, which are of Purbeck Portland, a stone as hard as marble. Every course has been carefully planned to ensure perfect bonding, and the stones as a rule are very large, some of them weighing four tons. Their unusual size, which adds much to the solidity of the construction, has not, I believe, increased the cost of the work. The mortar is made with cement, the beds are dowelled together with slate, and the finials secured with bars of solid copper. I believe the new masonry is so perfectly united that it might almost be treated as a solid mass. We had occasion to remove one new stone from the spire before anything was built upon it, and found it a very difficult task."

It was the choice of bad stone, both originally and in the restoration half-a-century ago, which led to the dangerous condition of the tower, so that this last paragraph is much to the point.

THE *Western Morning News* publishes the substance of the report of the assessor, Mr. James Brooks, on the competition for the new church for St. David's (Exeter), which has been gained, as already mentioned, by Mr. W. D. Caroë. The report speaks in high terms of the accepted design, both in regard to its practical planning and its artistic effect. The report also speaks favourably on many points in regard to the design by Mr. Harbottle Reed, placed second. The two other competitors were Mr. Tait and Mr. Jerman. By one of those curious "mistakes" which are too often occurring in regard to competitions, a statement was circulated in some of the local papers some days before the assessor's report was made known, to the effect that Mr. Jerman's design had obtained the second premium. How did this statement get about? Was "the wish father to the thought" on the part of some one concerned? The genesis of these inspired newspaper paragraphs about competitions is a curious subject of speculation.

THE Practice Standing Committee of the Institute of Architects have drawn up a series of notice forms for use in connexion with the requirements of the London Building Act, copies of which have been issued to members, and which can be obtained for a small payment by any one who requires them. There are five of these forms, distinguished by letters from A to E, as follows:—

A. Notice in regard to party structures (Building Act, Part VIII, Sections 88 to 92).
B. Notice of intention to build within 10 ft. of an adjoining owner's building and at a lower level (Section 93).
C. Notice as to projecting footings into adjoining owner's premises (Section 87, Sub-sections 5 and 6).
D. Notice to build a party-wall on line of junction of adjoining lands (Section 87, Sub-sections 1, 2, and 3).
E. For appointment of a third Surveyor (Section 91).

Each paper contains on its face a form of notice with the requisite blanks for filling in. At the back of the first four forms are full instructions as to the legal conditions under which they are issued, and the method of serving them, together with definitions of the terms employed (such as "party-wall," "adjoining owner," &c.). These forms, which are the copyright of the Institute, are likely to prove very useful, and we should expect that there would be a considerable demand for them, both within and without the circle of members of the Institute.

THE last issue of the *Bulletin de Correspondance Hellénique* (1895, i-x) contains, in the form of a letter from Mr. G. Milliet to the Director of the French School, a report on four months' work among the ruins of Mistra. The picturesqueness of this mediæval town, lying on a spur of Mount Taygetos, has distracted the attention of even classical archæologists from their study of the antiquities of Sparta, but till now nothing has been done for the systematic examination of its remains. The ruins consist of the great fortress, founded at the beginning of the thirteenth century by Guillaume de Villehardouin, and of two towns, stretching respectively to the east and north; what may be called the civil town is grouped round the palace of the Byzantine despots, and the ecclesiastical quarter round the Metropolitan Church; this last contains the archiepiscopal palace and no less than eight churches, besides numerous monastic buildings. Three of the churches, among which is the Metropolitan, are remarkable for their blending of Latin and Byzantine features. Several of them, and notably the Peribleptos, contain very remarkable frescoes, with scenes from the Life of Christ and the legends of the Virgin, important for the history both of art and iconography. Mr. Milliet, with the help of M. Eustache, of the Académie de France, and M. Scheffner, has made plans of the fortress and of all the important churches, has cleaned, photographed, and in some instances reproduced in coloured facsimile the best-preserved frescoes, and has collected and arranged in a local museum upwards of 301 architectural fragments and fifty-four inscriptions. Most important of all, he has, by his report, drawn the attention of the Greek Government to the imperative need for the protection of the antiquities of this unique town. M. Kabbadias has visited the site, and the necessary steps are shortly to be taken for the conservation of its monuments.

AT his fourth Royal Academy lecture on Sculpture, on Thursday, February 27, Dr. Murray concluded the portion of his subject dealing with "The Representation of Deities," with some remarks on the sculpture of the Temple of Niké Apteros. His fifth lecture, on Monday last, commenced the subject of Asiatic Sculpture, to which the last two lectures of the course were to be devoted. By the geographical term Asia

Minor, he explained, students of ancient art mean only a narrow strip along the west coast of it. It was certain that a number of different nationalities had sprung up along the coast of Asia Minor, previous to the era of Greek colonisation, and their language pointed to an intimate connection with Greece. In considering the artistic remains of Asia Minor that fall strictly within the historical period, *i.e.*, 700 B.C. and onwards, it would, said Dr. Murray, not be necessary to confine his remarks to sculpture. Asia Minor took precedence over the Greeks in the art of painting, in proof of which statement Dr. Murray referred to a great battle scene, the battle of the Magnesians, painted in Asia Minor by Bularchos about 700 B.C., when as yet there was no record of anything of the kind in Greece proper. Within the present century much had been done in exploring and excavating in Asia Minor, and within the last few years there had been found a series of painted sarcophagi at the site of the ancient Clazomenæ, a Greek colony in the Gulf of Smyrna, which threw an entirely new light on the early art of Asia Minor. The lecturer then referred in detail to some of the battle scenes painted on these sarcophagi, specially referring to the armour, the devices on the shields, and the helmets, which in some cases were peculiar. On the question of artistic style, the dancing figures of the youthful musicians were not a Greek conception, and it could hardly be doubted that the habits of the Lydians had inspired the painters of the sarcophagi, though the hypothesis of an artistic influence coming from Lydia to the Greeks of Asia Minor must be dismissed. But how far had the habits of indolence and play, which had spread from the Lydians to those Greeks, helped to produce in the art of the Greeks certain large types of the human figure and certain gifts of expressiveness which were foreign to the artistic instincts of Greece proper at that time? Apparently Brunn was right when he maintained that the element of breadth and simplicity, which struck him so profoundly in the sculptures of Olympia, was not and could not have been a direct development of the archaic art of Greece proper, because its characteristic was minuteness and exactness of detail, but had rather been the effect of a powerful influence which had proceeded in the first place from Asia Minor.

THE exhibition of the Institute of Painters in Water-Colours, at their gallery in Piccadilly, is much as usual; containing few remarkable works, a good many pleasing ones, and a good many very bad ones, among which one regrets to have to include some of the largest and most prominent works. Among the works which form the best attractions of the show may be mentioned Mdme. Ronner's kittens, especially "A bit of Rest;" Mr. Henry Stock's "The Cascade," an emblematical figure fine both in colour and drawing; Mr. Fulleylove's large drawing of the British Museum, an exceptionally good architectural work; Miss Whitley's delicate little drawings of "Butterflies" and "Shells;" several large landscapes by Mr. Jas. Orrock, with very fine skies and in a broad water-colour style, but very deficient in foreground colour—they seem to be all one brownish tone; Mr. Barratt's drawings of Oriental architecture and gardens; Mr. Joseph Knight's a "Welsh Funeral" and "A Sandy Road," the latter a perfect bit of nature; Mr. Gregory's portrait of a child ensconsced in a richly-upholstered sofa, the pattern and colour of which form an important element in the design; Mr. W. Rainey's small landscape "A Cornish Garden"; Mr. John White's "Winter Sunshine, Branscombe Beach"; Mr. R. Vicat Cole's "Evening Cloud," a very fine little landscape; Mr. Stanley Inchbold's "Rye"; several drawings by Mr. Wimperis, who is rather too much getting to sacrifice everything to the sky; and a fine landscape, "Near Roy Bridge," by Mr. C. E. Johnson.

AN exhibition of one hundred paintings in Britanny and in the Norfolk Broads, by Mr. W. J. Laidlay, now being held at the Dowdeswell Galleries, shows some fine studies of effect, but in a sketchy and superficial style which becomes more apparent in consequence of the comparatively large scale of the paintings. Fewer of them, and more thorough execution, would have made a more interesting exhibition. The pictures from Balmoral and Deeside, by Mr. Clayton Adams and Mr. Wake Cook, at Fine Art Society's Gallery, have the opposite defect; they are finish and nothing else, and suggest book-illustrations, rather than the class of work we generally expect to find at this gallery.

THE use of enamelled metal as a wall covering is not a new idea, but it is being put before the public in an attractive way by the Enamelled Metal Decoration Company at their show rooms in Queen Victoria-street. Their work consists of zinc of thin gauge on which coloured patterns are imprinted, and the whole surface is then enamelled and made permanent. Being made up of large sheets, joints are reduced to a minimum, and the whole surface of the wall can be easily and effectively cleansed by water. It is affixed to ordinary walls with a special paste, and can be put in position by any plasterer. As it can be stuck on an ordinary brick wall without the intervention of plaster, the expense of the latter is saved. In such places as lavatories, bath-rooms, and kitchens, it is obviously a sanitary covering for the walls and ceilings, and to be preferred to absorbent plaster. As to the designs on view, these, no doubt, will be improved in time. We fail to see why a material which lends itself admirably to broad effects should be tied down and marked out to represent tiles or in imitation of various kinds of wood. Justice is not done to the material by such a method, and our advice to the manufacturers is to go to some qualified designer who can produce something worthy of the material and the purposes for which it is to be used.

ROMANESQUE ARCHITECTURE.*

BY PROFESSOR AITCHISON, A.R.A.

OF all the phases of the Romanesque that arrest our attention, or excite our admiration, none are more admirable, nor more curious than the fronts of St. Trophyme at Arles (Bouches-du-Rhône), and of St. Gilles (Gard), both executed about the end of the twelfth century. Neither of them, when closely looked into, are wholly free from a slight barbaric touch, but at the same time there is a refinement, a sense of elegant proportion, a proper sequence in the series of mouldings, and a mutual enhancement of forms, which make a complete and studied composition of the whole. These compositions seem to me to stand half way between Greek perfection and the vigorous but more barbaric work of Early Gothic, for however incongruous some of the parts may be, they are so arranged that they compose well as a whole without looking heavy, jarring on your nerves, or setting your teeth on edge. The front of Notre Dame at Paris has one uniquely successful feature, the gallery of kings, just above the main doorways, which binds the whole composition together in a perfect way; it is a supreme effort of genius and towers far above the attempts to surpass it at Amiens and Reims. The doorways are rather ineffective and commonplace, and compare badly with the porches of Soissons, and perhaps with those of Amiens, if the architect of the last-mentioned Cathedral had suppressed the trivial fringe round their outer edges. The two side windows of the first floor with their pointed arches give a note of dissonance with the rose window, and neither the open gallery, nor the towers are quite happy in proportion, nor do they make of the composition a perfectly congruous whole; yet the front is stamped with a look of youth, vigour and energy.

In the front of the Parthenon, every part has been completely studied and arranged; there is not a line, nor a shadow that does not conduce to the whole effect, and the sculpture gives by its undulating surfaces and curved lines the due contrast to the rigid architectural lines. The stiff triglyphs that properly contrast with the long horizontal lines, enhance the sculpture of the metopes, and are enhanced by it; not to speak of those delicate variations in the sizes and spacing of the parts, that, though unperceived, impart a variety to the whole, so that it never cloys nor wearies you.

When you first see San Trophyme you seem to have come into a different country, where Romanesque is unknown, where grace, elegance, proportion, and composition appeal to a refined and cultivated people. The whole composition, short of the steps, is nearly included in a square. The cornice of the flattish pediment is carried on vigorous corbels, perhaps too vigorous, the upper ones of which are just clear of the outer archivolt of the doorway. These archivolts are in three elegantly moulded steps, the last step being deeper, and filled with two rows of winged angels. A plain stylobate with a deep plinth on either side of the doorway supports three columns, the two outer ones Corinthian and the centre one Romanesque; each base stands on a pedestal, deeply and horizontally fluted, which is continued between the columns, while the front of the column pedestals are masked by sculpture. The columns support an entablature of great originality, about half the height of the columns, with a narrow architrave or ornamented band at the bottom, and a cymatium enriched with leaves at the top. In the deep frieze, nearly a third of the whole height of the columns, are processions of figures which continue in the front breaks. The entablature follows the returns, and runs as a lintel over the door, and contains seated figures; this lintel is supported at each end by pilasters, and by a thin column in the middle. Three figures of saints fill the spaces between the front columns and the return pilaster. A figure of our Saviour in a Vesica Piscis is in the middle of the tympanum, with two figures of the Apocalyptic beasts on either side. The horizontal steps, the lines of the stylobate, the flutings between the columns, and the top and bottom lines of the entablature are admirably contrasted by the vertical columns and the processional figures. The coarse flutes of the pilaster supporting the lintel are the only serious blots in the whole composition.

If one wants to be hypercritical it would be easy to point out incongruities; but the aim of the critic should be to appreciate and point out the beauties of any great work of art and to enjoy it. If two great geniuses, an architect and a sculptor, hope to do something better, for which we should all be devoutly thankful, let them avoid the incongruities; but until we get it, let us rest and be thankful. There are some of the great buildings of antiquity, of the Middle Ages, and of the Renaissance, that are perhaps more perfect, and are certainly grander than San Trophyme; but with the exception of that little caryatid temple attached to the side of the Erectheum, and perhaps some small Venetian palaces, there is nothing else I recollect that struck me so much as San Trophyme.

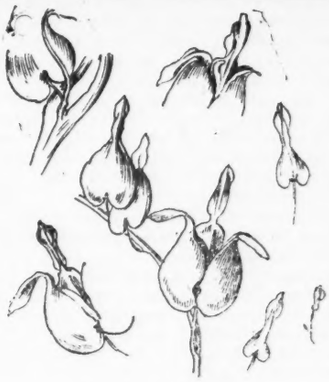
There are some interesting Romanesque cloisters at St. Trophyme with twin columns and capitals. The capitals are sculptured with figures; but the effect of the whole comes very far short of the excellence of the front.

The portal of San Gilles is of much larger extent than the front of San Trophyme. It is elegant and dignified, and its proportions and composition are perhaps more dignified than those of San Trophyme, but it is not so perfect as a whole, and its solecisms and incongruities are more apparent; but for all that it is a noble, original, and stately portico. I presume it was never finished, for as it is the string-course that crowns it is paltry and insufficient. One presumes, too, that the shafts, if not the whole columns, were taken from ruins, as their heights, thicknesses, and details are so different; the front consist of a large central doorway with two smaller side ones, all three circular headed; the outer archivolt of the central doorway springs from the top of the entablature, which comes very boldly forward, and is supported on each side by two dwarf columns standing one before the other, with bases, and a deep square plinth, standing on pedestals. The outer archivolt of the side doorways are supported on the thin architrave of the entablature, and this is held up by two large columns, rising from the steps, one on either side, with another big column between them and the dwarf ones. The frieze is sculptured and stops a little short of the archivolts of the side doorways. Above it there

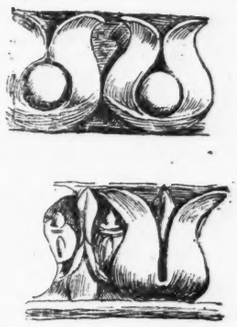
* Being the fifth Royal Academy Lecture on Architecture this Session. Delivered on Friday evening, February 21, 1896.

Fern.

Fern Capital.



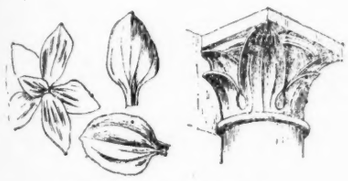
Diclytra.



Ornament from Diclytra.

Romanesque Finial.

Death on the Pale Horse
(Nôtre Dame, Paris).



Plantain Leaf and Cap.

SOME EXAMPLES OF ROMANESQUE ORNAMENT.

is a wide string or shelf carried by corbels, probably to support figures or loose sculpture. This shelf also is short of the archivolts of the side doorways. The frieze returns in and forms a lintel to the centre doorway, and is supported by half pilasters at the sides, and a narrow one in the middle; and the lintels of the side doorways are sculptured and at a lower level. The arch of the central doorway has three steps, and the side ones two, and in all cases the tympanums are filled with sculpture. At the wall at the back of the columns, and on the returns to the doors, are niches with saints; over the saints is a subsidiary frieze of scroll foliage. The sides of the jambs and of the pedestals are sculptured in relief, with a hunting martichore on the latter. The lower pedestals of the back wall are fluted, and the whole of the portal stands on a flight of twelve steps. Viollet-le-Duc attributes both of these fronts to the use and imitation of Gallo-Roman remains and to Roman work from Byzantium brought, and to the influence of carved ivories, book-covers, and the goldsmiths' work brought in the way of trade from Antioch and Constantinople: for, as he justly says, though iconoclasm might be rife at Constantinople, it did not prevent the Westerns getting from it what images they wanted. Still, I think we must add something for individual genius too. Le-Duc was, perhaps, right, as the preacher of the Gothic crusade, to refuse to linger over things that led to nothing, but I think we may stay to admire such work, for "a thing of beauty is a joy for ever."

There are some other gifts that the Romanesque architects presented to the world, and by no means the least important ones, that have not been mentioned and that must be considered; though even if these were left out, we can still see how much we are indebted to them. By the beginning of the twelfth century a hierarchy of skilful workmen connected with the building trade had been created, and fairly skilful architects. Much of Europe had been covered with new public monuments when the old ones had been destroyed or left to go to ruin, and when the land was falling into marsh and waste, and the architects had given a new and original flavour to architecture. Hitherto, or at least until after the eleventh century, they had mostly been accustomed to copy the debased mouldings of the decaying provinces of Rome or of Byzantium; and the Byzantine architects never rose to any intellectual eminence as profilers. It is supposed that the position the Romanesque architects had attained in our art, and the elation produced in them by the Christians conquering the Saracens, had made them ready to appreciate and turn to their own advantage the inventions of others. However, early in the twelfth century they doubtless began to take a new view of the function of mouldings, and Viollet-le-Duc thinks that the buildings of North Syria and the Hauran were great factors in this mental Renaissance.

Doubtless our mental Renaissance will come some day, and we shall then be on a par with the barbarians of the twelfth century, instead of being, as we now are, below them.

Profiles have to fulfil several conditions before they can receive the highest commendation. The first condition is, that they fulfil the purposes for which they are intended, viz., to throw off rain, and to spread or to concentrate weight. They also appeal to our reason and our taste. Our reason asks that the mouldings should look fit for their purpose; if a moulded part is to spread weight, we want it to be deep in proportion to its projection; and almost the same form is wanted, only reversed, if it is to concentrate weight. In the case of purely æsthetic mouldings, the shapes and sizes that a series take should be well-proportioned, harmonious and contrasted, and look reasonable. For instance, a hollow with only a narrow fillet over it for bearing weight looks ridiculous, for either there is no weight to carry, or if there be, this thin edge or nose would break off. You have doubtless noticed how this was done in the Ionic bases of the Greeks by bringing out the fillet under the torus flush with its projection, and which made it, too, a line of light instead of being in shadow. With these exceptions, the rest is a matter of taste, carried out in accordance with the exigencies of the climate; and it is only when the taste is cultivated and refined, and the requirements of the climate are deeply studied, that we get a perfect system of profiling or moulding. We call it profiling because the arrangement is mostly made by sections or profiles of the mouldings. In Europe, there have been only three epochs in which this art has been deeply studied, the Greek, the Late Romanesque, and the Gothic, although there were some spasmodic attempts made by the Roman architects. I need scarcely say that the Greek mouldings are infinitely superior to the others for many reasons, the Greek intellect was the supreme intellect the world has yet seen, and its artistic side was the most developed. The Greeks sought artistic perfection in the most absolute simplicity, and from this restraint they were enabled to spend infinite time in perfecting the few elements they had to deal with. The material they used was white marble, which may well be called a perfect material, and they had a clear atmosphere and a fierce sunshine, so that the smallest nick they made, told like a grey or a black touch on a sheet of white paper, and every gradation was perfectly seen. If Romanesque had continued after the architects found out what mouldings meant, it might possibly have been simplified and perfected, but from the intercourse of the West with the Saracens, greatly its superiors in civilisation, the Saracen architecture impressed itself on the Crusader's mind, and Gothic followed out a geometric scheme.

Instead of having a dozen or twenty mouldings in a large Greek building, there were hundreds, if not thousands, of mouldings in a Gothic abbey, church, or cathedral, and consequently the mouldings had to be profiled as rapidly as possible; anything approaching perfection, if it required much thought or tentative experiment, was impossible.

The Mediævals were, however, quite as logical as the Greeks, they had a misty atmosphere and little sun, and what sunlight there was, was generally of the tamest sort, so there was little to fall back on, but deep shade and shadow. If a light edge or streak was wanted on any particular moulding, a wide fillet or a nose was put on the moulding, and it was made to project from two dark hollows.

I have advanced a little beyond my boundary for the sake of illustration, for you know better where the road tends after going some way, than when you enter it. I may here say, that as soon as the Romanesque architects had found out what mouldings meant, a group of them was made to tell its own story by means of lights, shades, and shadows, and the copying or paraphrasing of debased Roman or Byzantine mouldings was abandoned.

In the hands of their successors, the Gothic architects, men as shrewd, enterprising, and determined as themselves, their discovery was likely to progress rapidly, and we know that it did.

There is one peculiar view which the Romanesque architects took that must be considered, the Classics or, at least, the Romans.

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made their entablature a ratio of the height of the column, and the cornice was a proportion of the entablature; but the Romanesque architects made the thickness of the bed of the stone they used the thickness of the cornice, no matter what was the height of the building, so that they had to profile their cornices very carefully, to give the due importance to the cornices of their large buildings, and not to give undue importance to those of their small ones. A good deal of the early work was naturally moulded in imitation of the Roman or Byzantine work, where there was any about, and when there was skill enough to work mouldings, and money enough to pay for them; but the plain splay was the commonest way of making the capping to a string, or to an abacus, while bases were often plain splays, and next in prevalence to the splay was the pudding, which we call a roll or a torus, and as the barbarians increased in skill, in knowledge, and in reasoning on effects, they saw that these plain splays were not only useless as drips, but were ineffective as ornament; and the latter consideration seems to have more weight with them than the former.

The first improvement seems to have been to make a nick in section between the wide vertical fillet and the splay, then to project the capping far enough to get a throat under it, and eventually to form the splay into a flat hollow, that was at once lighter and more lively. Possibly the next step was to finish the lower arris of a vertical face with a roll or bead, for although this increased the labour, it required less skill. Even now our own skilful masons prefer an angle-bead to an arris, if the stone be hard; while to make a quirk to the bead was but a step.

I am far from saying that the sight of new mouldings, especially if they were striking, would not have tempted the Romanesque architects to imitate them; for when Japan was first opened, and Europe was flooded with its productions, all artistic work took a Japanese tinge, besides the direct copying, and still preserves it.

It is obvious that the Early Gothic bases are almost pure copies of Greek ones; so we may admit that the discovery of the ruined cities of North Syria and of the Hauran may have led the crusading architects to imitate the Syrian mouldings.

We must also see that directly the architects' eyes were open to the effects that could be got by mouldings, they would see that the climate of England or Normandy was not exactly like that of Syria, and also that their own taste and that of their customers was not quite the same as the taste of Græco-Syrians or Syro-Greeks of the fifth and sixth centuries.

If we could suppose ourselves to be in the same condition, no longer asking ourselves what a Greek, a Roman, a Romanesque, or a Gothic architect would have done; but if new tunes could not be played with new mouldings and if our customers might not like them, it would make quite a revolution, but it would only be the same sort of revolution that the Gothic architects made when they first began to think and to act for themselves. If these daring innovators can see our antics from the Elysian fields, they must be as much amused at our worship of their innovations, as the Spaniards were to see the Mexicans adore the stuffed horse of Cortez.

This diagram shows a string (capital A) of the middle of the twelve century, and its contractions B D E in the thirteen century, all cut from a block of the same thickness. Viollet-le-Duc believes the contraction of the antique mouldings was a characteristic of late Romanesque and early Gothic. In this case, the alteration is a purely practical one, and I will let Viollet-le-Duc speak for himself,* for he is always as interesting as a good novel, and a great deal more interesting than most novels.

The string A was often used in the middle of the twelfth century. The profile A taken out of the block a b c consists of a slope a e, of a nick f, of large hollow g, of a torus, and of a quirk h. It is the torus with its hollow that is the accentuated part. This profile not being of a nature to throw off the water from e to c, the architects of the beginning of the thirteenth century, still keeping the same projection, drew the profile B, sensibly increasing the upper slope, and sinking a large throat at l to throw off the rain and contracted the lower profile. A little later the architect increased the slope (profile D), and contracted still more the lower moulding, leaving nothing but its accentuation, the torus m. Towards the end of the thirteenth century, the slope is increased (profile E), and the throat only is kept, nothing remains but the fillet, o. Thus of the Romanesque profile derived from foreign art, the Gothic architects by a series of logical deductions have got a very different section from the one the Romanesque architect started with. By increasing little by little the slope of the upper member, and in finishing that slope with a drip, in contracting so as almost completely to suppress the lower moulding, the profile of the thirteenth century school has made of a string, having only a decorative meaning, a useful member—a means of diverting the rain from the walls, without even fearing its splashing from a horizontal surface, or even from a trifling slope.

I have only one more subject to speak about. In this short excursion I have taken you through Romanesque, not so much with the intention of showing you what Romanesque was, but how the architects infused new life into the architecture that existed before they came into the field, partly to show how barbarians, almost pure savages, gradually raised themselves into very respectable architects in the six hundred years they were learning, and led the way for their successors to present the world with Gothic, the most astonishing phase of architecture it has yet seen, a phase that required enormous buildings and lofty towers to express those emotions that then swept through the Christian nations.

My last point is the turn the barbarians, when almost civilised, gave to floral sculpture; they naturally admired the floral sculpture they had seen adorning buildings, and got the best artists they could to enrich their own. From the various fortunes of war and policy, artists were driven from all parts of what had been the old Roman Empire, to seek employment in remote places where their life could be preserved and their living could be got, so that we see floral sculpture of most varying merits.

The architects and sculptors, however, could not become able and close reasoners without asking themselves of what interest to them was the conventionalised ornament of the Byzantines and Romans, and why they should not adorn their own architecture with the plants and flowers they knew and loved. The question was certainly reasonable, and the answer seemed to them equally so. Posterity has undoubtedly gained by this innovation, for a new departure is always interesting, and may lead to unlooked-for results; but the point overlooked was this, that floral sculpture is an art that took the highly-cultivated ancients hundreds of years to perfect, and that there was no short cut to this perfection which could be seized on by half-civilised artists.

I give you a late Romanesque capital, suggested by an opening fern, a finial with a head among leaves, and a capital with leaves copied from the plantain, which has a monumental style. And I may say that what we are still hoping for, is the conversion of common plants into ornament, that will harmonise as well with fine architecture, and be as beautiful as Antique ornament, or as its Renaissance paraphrases.

The barbarians had a passion for figure sculpture, they felt much more keenly than we do that "the only study of mankind is man." I cannot help thinking, that even now if our figure sculptors were, shall I say, to so far decline from the dignity of art as to give us historic or imaginative sculpture on capitals, corbels, or panels, instead of wholly devoting themselves to civic busts and funereal monuments they would do much to make sculpture again popular. It is, of course, to be deplored that the people of the day cannot be sculptured, because modern dress is too ignoble, but there are passages in Scripture, passages in history, passages in the poets, and in the novelists, that might, if sculptured, still enthral us. In a cold damp climate, where people are clothed from head to foot in ugly and ridiculous clothes, and where violent passions are mostly restrained, there is little of the present that can be sculptured. Those figures of exquisite perfection we annually see, can hardly appeal to us, who never see the human figure, as they did to the Greeks, who saw the finest men exercising and struggling naked every day.

Really inspired dramatic sculpture would, I think, even now set most people's blood a-tingling and might, I think, make sculpture popular again. In the Middle Ages, the very clergy did not object to naked figures if the subject required them; though the mere fact of being naked was a deadly sin, and miracles were performed to save holy persons from this defilement. At Nôtre Dame there is Death on the pale horse, and Death is no grisly skeleton or withered hag, but a naked and blindfolded young women, armed with a cutlass, the victim she has just slaughtered falling from the horse behind her.

* This is an abstract rather than a translation.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

THE ROYAL GOLD MEDALLIST.

AT a special general meeting of the Royal Institute of British Architects, held on Monday last, Mr. F. C. Penrose, F.R.S., President, moved that, subject to her Majesty's gracious sanction, the Royal Gold Medal for the promotion of architecture be presented to Mr. Ernest George, for his executed works as an architect. The motion having been seconded by Mr. Aston Webb, F.S.A., Vice-President, it was resolved that the Royal Gold Medal for the promotion of architecture be presented this year to Mr. Ernest George, Vice-President, for his executed works as an architect.

The ninth general meeting (business) of the session was then held.

Referring to the resolution of condolence in respect of the late Lord Leighton passed at the general meeting of February 3, the President read the correspondence that had passed in relation thereto between the Institute and the Council of the Royal Academy.

The President announced that the Council had that day drawn up and signed a petition to the House of Commons urging the rejection of the City and South London Railway Bill now before Parliament, which Bill, if passed into law, would involve the demolition of the church of St. Mary Woolnoth.

The following candidates for membership were elected by show of hands, under By-law 9, namely:—

As Fellow.—H. P. Burke Downing.

As Associates.—H. C. Pegg; Osborn C. Hills; E. R. O. Davis, Leicester; C. M. E. Hadfield, Sheffield; J. R. Smith; K. Wood, South Shields; E. A. Whipham, Stockton-on-Tees; H. W. Anderson, Adelaide, South Australia; A. Down, Warrington; L. R. Ford; G. C. Lawrence, Bristol; W. E. K. Palmer; G. R. Smith, South Shields; W. H. Steadman, Bristol; T. Turner; E. T. Allcock; E. G. C. Down, Cardiff; C. B. Flockton, Sheffield; A. J. Stratton, Liverpool; T. W. Hooley, Manchester; Walter Brand, Ipswich; H. Morton, Taunton; J. D. Bland, Cambridge; E. F. Cobb; P. R. Smith; J. L. Redfern, Hanley; E. R. Danford, Rotherham; N. Fitzsimons, Belfast; V. D. Horsburgh; C. S. Burgess, Edinburgh; E. E. Jordan; G. L. Sheppard, Worcester.

The President announced his approaching departure for Athens to take up his duties as one of the International Commission of three architects, appointed by the Greek Government to inspect the repairs required at the Parthenon in consequence of the earthquake of 1894.

The proceedings then terminated.

THE MODERN STENCIL AND ITS APPLICATION TO INTERIOR DECORATION.*

Working.—Next as to the method of working. Given a good stencil-plate—the common commercial pattern and the most individual are each worked in the same way—it all depends on the workman. The same tools are used, but with varying ingenuity. Let us take the design named the Holbein, which employs two plates and a mask. It is immaterial whether you start stencilling the background or foreground. Let us take the background. In this you will not wish the ties to tell out with the same emphasis as in the scroll, the more important feature, therefore you lay upon your fabric the mask which shuts out the scroll, thus masking that portion. You then proceed to stain the whole of the exposed fabric with a wash of colour, this leaves the scroll already in a higher key. That being done, the mask is removed and you substitute for it the stencil-plate which supplies the small foliage. Next you proceed to the scroll itself and the design is complete. For three or more plates you work in a similar way. You use the ordinary brush made for the purpose. It is held vertically and the colour is patted or brushed over the plate so that the pigment is driven into the fabric more or less energetically according to its texture. But the whole art lies in the quantity of colour taken up by the brush, and the way it is applied. This is the really important factor. Yet it is one that can hardly be taught, each must learn it by his own failures.

* The conclusion of a Paper read before the Architectural Association on the 21st ult. by Mr. Arthur Silver. The first part of the Paper was published in our last issue, p. 184.

Let me specially impress upon you the value of making mistakes. You need not necessarily start with that intention. From disaster you learn what no theory can teach, indeed the very failure to obtain the effect you aimed at often enough supplies an idea for another effect that may be supremely well adapted for another motive. Success is based invariably on the number of obstacles encountered and overcome; so failures are the stepping-stones to achievements. I speak with feeling—based perhaps more on faith than experience, and I should be very sorry to have to show you my first attempt.

And here I may give credit to an enthusiastic believer in this method, my friend, Mr. Rottmann, whose practical suggestions have led to many valuable improvements in the stencilling I am discussing to-night. In many favourable press notices of our work, Mr. Rottman's share was overlooked, so I wish to call special attention to it now.

When your brush is properly loaded you begin on that part of your form which needs the greatest emphasis, and work with the same brush, which each minute becomes dryer towards the lighter portion of the form. This gives you the gradation of colour. To explain in words how to accomplish the effect of broken colour is to attempt the impossible. It is the instinctive touch of the worker that accomplishes it, he himself cannot tell you how.

It is curious to observe the peculiarities of temperament even in the ordinary process of stencilling, and the different effects obtained when precisely the same colours are used by different workers. The impulsive temperament gets one effect, the lymphatic another, until you are reminded of the organ grinder who was made merry by the acquisition of extra coppers, and who thereby accelerated the time of the "Old Hundredth" to that of a lively jig.

But to return to the working of colours. Take, for example, the design, the tulip frieze. You will observe that the loaded brush is employed at the deepest portions, and when the brush is more or less dry you work it towards the portions of the form where the lighter tints are needed, and so on. For dark fabric, you have obviously to produce your design in lighter colours, and consequently must use opaque pigment. This means hard manual labour, because you must drive an opaque colour into the fabric bodily to ensure permanent results.

It is best to take a practically white pigment first and beat it into the whole pattern. This serves as a basis for your stains. Of course this method means a double process, and is another objection to the use of body colour; besides, every fresh stencilling clogs up the finer interstices of the stencil-plate. If you require a dark ground, it is not essential to use a dark fabric where the yarns are dyed before the cloth is woven. For you can obtain your dark ground effects by masking out the design and staining your ground first to the required shade. Then you proceed as already explained.

Another method, which is at present the subject of experiment with me, is to discharge the dark colour by chemical means and proceed as before; but as yet I am not satisfied sufficiently with my results to show any specimens. In using silk of a fine texture with a corded and "gros" surface, you can obtain some most charming effects.

A piece of good silk is really a most sumptuous material to work upon when you have thoroughly mastered the use of your brush.

It imparts richness and luminosity to the pigment; in the absolute subtlety of its possible gradation you can obtain the quality and softness of colour in a flower with the brilliancy of a jewel. For a lady's boudoir, or for even a Court dress, I think it would be difficult to beat.

As you will now see for yourselves the method of stencilling can be as simple as anything could well be, and that there is little to say about it. Like Columbus with the egg, you have seen how it is done, and it is within the power of the least to accomplish the like.

General.—But you may ask what I claim for stencilling as contrasted with other established processes. Of course, we shall be told that if you cannot employ first-rate mosaic-fresco, or tapestry, it is wiser to avoid any substitute. Some of my results may be denounced as imitations of tapestry or of some other material. But there are imitations which are designed to deceive, and others too transparent to deceive anyone. Mr. Hamerton has said of painted tapestry that it was the only imitation which not merely rivalled, but which surpassed its original, and some of the stencilling which I show you here is so closely allied to tapestry painting in its essence (that is, dyeing the thread after it has been woven, instead of before) that I hope you will admit that his words may be held to apply to some extent to the stencilling under discussion.

The great merit of the stencilling is that, while it may yield effects that are in fair rivalry with infinitely more costly methods, it does not conceal its own lowly origin. If you observe the limitations which it imposes, it repays you a thousandfold. Obliterate the ties, and endeavour to blot out its imperfections by added hand-work, and you produce at best a dull, lifeless imitation of true painted decoration. But if you never lose sight for a moment of the fact that the stencil-plate is a mere implement, but that each touch of the brush of the worker is influenced by brain-power, then you will see that the mechanic within these limits is raised to an artist, and impresses a personality in every touch which no artisan at a printing-machine or loom, or setting the tesserae of mosaic, can any way approach. Therefore I am not offering this stencil-painting in competition with wall-paper, nor with tapestries ancient or modern, nor with mosaics or frescoes. But I do submit that its utility, its extreme adaptiveness, and its general æsthetic value marks it as a product worthy to stand upon its own merits, and one that will give, if not as much, *more*, value in its effects than the outlay it entails.

Utility.—To architects it is needless to point out the advantage of selecting a surface decoration that can be applied as easily as a wall-paper—one that can be fixed in such a manner that it can be removed and re-applied elsewhere, in event of the householder shifting his domicile, and stand a thorough cleaning again and again. More important still is the fact that the fabric can be stencilled in lengths, so that not an inch of waste occurs, and, chief of all, it can be treated in the colour and character that suits the lighting of any particular room. Can any one point out any method of decoration which has so many advantages? Can any one point out any process which offers such unlimited colour possibilities? and, again, can any one point out any decoration which can employ original design with so limited a cost? Every machine-manufactured decorative fabric must be prepared in hundreds of yards. Hence it must be planned to meet the average requirements. Here with a little stout paper and a few hours of skilled labour, you can produce a practical implement to carry out any given scheme. Now, what strikes an average to suit many different rooms must needs fail to be the ideal for any single one.

Adaptioness.—In further evidence of its flexibility in adapting itself to the particular place it has to occupy, it may be pointed out that stencilling necessitates no abrupt stopping of flowing lines. For in a frieze broken by a chimney breast a scroll need not be made to bend round a corner, and so arrest a subtle movement. The pattern in every break, every recess, every start from skirting to ceiling, may be so arranged, and that simply, that the origin and birth of the line is evident, and carries on the fulfilment of its purpose quietly, restfully, and naturally to its termination. When studying the decoration of the ordinary room one finds invariably that the lines of the design come to a dead stop.

Further, it is by no means preposterous, or an over costly method to arrange a scheme for an entire frieze, in which no repetition of the same forms should occur. One may suggest for this purpose, a flight of birds, with the exquisite subtlety of line and power expressed in their sweeping movements, to which may be added cloud forms, tree tops, &c. Even for an entire room there is no necessity for a repetition of any single forms, or, forms combined within the limit of a repeat. Naturally, for such a purpose many plates would be required, and these would be worked together as a whole, with due regard to composition and proportion. Such an arrangement is eminently suited for a room or gallery where there is an absence of pictures or articles of virtu.

You can also modify patterns already cut to an unlimited extent. One can frequently introduce in these certain forms suggested by special requirements; for instance you can mask a portion and insert a shield or monogram. The easy manner in which lettering can be worked into an existing design offers advantages to semi-public apartments. This is a point which I have not time to dwell upon here. I think I have said sufficient to show that so far as design is concerned there is practically no limit to the freedom with which it can be rendered by stencils.

Fillings.—It may be suggested that stencilling may be admirable and suitable for friezes and such like purposes. But that the very quality of which I boast, namely, the broken colour, would be an actual impediment for fillings which have to be joined in straight and vertical lines. This difficulty we have overcome by placing two breadths of fabric side by side, working the same colour brush over the two salvages, therefore when breadths Nos. 1 and 2 are stencilled, breadth No. 3 is placed by the side of No. 2, and so on until the whole quantity is complete. I have recently had occasion to test this method. The design the "Benevenuto" was prepared to a large billiard-room and applied with entire success. There are few difficulties in this direction that cannot be overcome with a little determination and patience. Assuming the method I have just named to have been a failure other resources were open. The case would then stand thus—viz., you have to create a design for a wall filling, which shall join and yet not show the join. It follows, therefore, that if you *are prohibited* from working on the temporarily arranged joint with broken colour, you must plan your design so that you can cut in a straight line through the *ground* colour. In symmetrical designs this is a very simple matter, but in an all-over or powdered design a little more ingenuity is required. Please look at the *tulip garden* filling. I think it will be difficult for you to trace a straight line which would allow the scissors to do its duty without cutting through some colour—for all that it is there—as a straight-edge held against it will prove.

Ethics of Design.—Inasmuch as design plays so important a part in interior decoration I may not be out of place in making a few remarks on the ethics of that portion of our subject. Somebody has said that a plain sheet of white paper is more beautiful than any pattern or painting ever worked on it. This statement belongs to the popular class of depreciations that the incompetent have to hurl at those who attempt. If such a statement is true—it is only so in the sense that silence is golden is true. Would knowledge have advanced if all practised golden silence? If we had all adopted the cult of the white paper, where had art come in? Fallacies are the sheet-anchor of matter-of-fact persons. Common sense (as Philistia understands it) is based upon the lack of understanding, whether pattern or politics happened to be concerned. To be satisfied with nothing is the pride of those who cannot obtain anything. Therefore, as we are not satisfied with bare walls, we must have design. If we have design we must endeavour to realise the purpose to which the particular design is applied. The first is to grasp and adhere to the fact that walls are perpendicular and that the surfaces are flat. Also let it be continually borne in mind that, almost without exception, a room has its definite purpose. It also contains, as a rule, doors, a fireplace, windows, and recesses. The wall spaces are broken up by the fittings, furniture, hangings, and pictures. Therefore the continuity of the design is certain to be interfered with in the ordinary course of things. These conditions are emphatic and must be accepted and likewise turned to advantage.

Let us briefly consider the various purposes of the various rooms. A sensitive worker is necessarily influenced by different emotions in sympathy with the character of the rooms for which the design is being prepared. It is only by realising acutely what these are, that a fit and proper result can be achieved. For the mistress of a house to superintend the culinary arrangements when attired in evening costume is quite as reasonable as to attempt to take motives suitable for a lady's boudoir and apply them to a design for a kitchen wall-paper. The cauliflower and the jessamine will not lie down together.

The dining-room should suggest breadth, solidity, and hospitality; the library, a physical repose and an inducement for study; the drawing-room should be stimulating and yet refined in detail; the boudoir should express dainty forms of facile and easy invention, and conduce to the charm of confidential exchanges; the bedroom is for slumber, therefore we do not want nightmares in the flat, nor complete oblivion; but the song of the lullaby in pattern. For the nursery and its innocent occupants, fresh with the breath of life, what genius is too lofty to design for this humble purpose? He would be unworthy the name of "artist" who felt this work beneath him and ignored the opportunity for a never-ending influence in fancy, form, and colour, associated with the vastly-important fairy tale or legend. What a genius of the first-rank can do with a fairy story you may all see in Sir E. Burne Jones' pictures of "The Briar Rose." The possessors of imaginative gifts who realise their ideas both for the finer and "coarser" arts for the advantage of the little ones, give to *them* the groundwork of an educa-

tion. An education which is as important and as permanently influential as it is unconsciously received. Or for the same idea in the simplest materials, take Mr. Walter Crane's nursery wall-papers. The charming refinement and character of these designs is only equalled by the absolutely masterly skill with which practical limitations are turned to positive advantage.

Not all parts of the house are so obvious in their suggestiveness, yet the staircase may symbolise an upward direction. Its walls exhibit large and unbroken spaces, revealing in its various flights rooms which have distinctive and separate uses, so the imagination may take note of such suggestions in conjunction, and thereby produce a design of stability and breadth which shall include and embrace all the others, as well as striking a key-note to the whole. Staircases need not be too archæological. Some people treat them prehistorically with weird marble papers, or Egyptian symbols, or possibly Mediæval allegories. The staircase should not be the place with a past, but the ladder for the future.

For all these purposes the design is of the first importance.

A good design really exercises an effect almost hypnotic. A designer must be a first cause for these effects. The suitability of an idea for a purpose is insistent. For instance, scullery utensils upon a grand piano decorated with gesso are out of place and lead to unpleasantness—but not more so than a finely-conceived decoration, gorgeous and full of idea, carried out in mean materials for a back-passage.

Colour.—So far I have dealt chiefly with form, we now approach *colour*, a still more important subject. What methods of economic production most nearly comply with the requirements of high art (so-called)? By the requirements of high art I mean a decoration which will offer you an uninterrupted line combined with infinite possibilities of colour. I think stencilling fulfils these demands. By no other means short of hand-painting, whether in fresco or other material, can you give the worker so much scope to his fancy for varied colour. To talk of colour is practically impossible. Its nomenclature conveys nothing beyond a vague general notion. If I ask for a scheme in red I may obtain something as hot as fire, or an effect as dry as sand would be to the mouth. Therefore on this I must perforce be brief, and yet I should like to say something which has a very definite bearing on this matter, for if the form in design is important, surely colour has far more claims. The most joyous of designs may be saddened by colour, and yet a sombre motive may be treated with dignity in a scheme of bright red, which is supposed to be the most exhilarating. I say supposed to be exhilarating, for after all, it is more the association of ideas than the raw colour which affects you. If we examine the rooms we live in, and the scheme of decoration appropriate to each room, one of the questions which almost naturally arises is, Why should a dining-room be always dark red? Is it to match the underdone beefsteak which Continental prejudice believes to be our favourite diet? But, on the other hand, why should a drawing-room be colourless? Is it thus as a foil to the conversation?—which is often highly-coloured. Nor need a breakfast-room be too simple and virtuous. The early morning suggests innocence and candour, it is true, but it brings also letters and depression. Gay colours seem to me as needful to begin the day as to end it. A sunrise is often as charmingly schemed as a melodramatic sunset.

Ought we not at this time to consider very seriously the relative positions of English artists as designers and as colourists? Latterly, the pure invention of pattern which the designers of this country have evolved has attracted European attention. I say this because I know it and am proud of it. For even in my own humble sphere the manufacturers of almost every European nationality have given me commissions for goods ultimately to be disposed of in the English market and their own. But this is not sufficient. I firmly believe that we do "hold the field" above all nations for originality and invention in design, but as regards colour, that is another matter. I would not venture to claim our supremacy in that respect. A merchant can commission the English designer for something "new" in form and idea, and be sure he gets it; but when the stuff is made a designer must often own to his sorrow that his scheme of colour has been greatly improved by the printer and manufacturer. Indeed, this is a matter sometimes left entirely to the buyer, the designer only supplying the outlines. This is not as it should be, and I have often wondered whether there are causes other than merely climatic reasons for this shortcoming. We have schools of design where invention of a kind is cultivated, but as for teaching pupils to emphasise the development of a finer sense of colour—there seems to be none. I am here following in the wake of my friend Mr. Alex. Millar, who, in a lecture on carpet-designing given recently at the Society of Arts, called special attention to this deficiency in our national art training. He made a suggestion which seemed to me to be of the greatest value, in fact, I cannot lay too much stress on the stupendous importance and influence which it might have if carried out thoroughly. It was that "colour"—as distinct from form—should be taught as a separate subject. Taught as thoroughly and held of equal importance to form. Neither is complete without the other; but we take the one very seriously and leave the pupil to pick up the other anyhow. For a long time after 1851, when men were supposed to have changed all this, the designing capacity of this country continued at a very low ebb. During this period anything good of its sort, was almost invariably produced abroad.

Indeed, manufacturers would hardly deign to look at an English design. Now that our designers have attracted European attention, I feel more anxious than I can well express that the onward march to the maintenance of our national supremacy in industrial design should not be crippled and hampered for the lack of that charming companion, colour. Form, beautiful as it may be, is but as dry bones, the mere skeleton of an idea. It must be clothed with life, and colour is to form what breath is to the body.

In my contribution to a work called "Practical Designing," edited by Mr. Gleeson White, I have referred more fully to our position in colour quality in comparison to the French. Although I have an intense objection to the French styles of modern design, I cannot but admit as colourists they are pre-eminent within their particular and somewhat restricted limits. It is only just to say that they are simply splendid in some examples, and that at the best we cannot touch them. I own this with tears in my voice. Therefore, in season and out of season, I would harp on this theme until the attention of those in authority is called to the crying want to complete the education of our native genius for inventing forms, which no one can deny exists. This has been brought about by artists whose names are as familiar to us—here—as household words, who have in their turn influenced practical craftsmen. One recognises thankfully the great impetus to this development given by those architects who have not only been quick to recognise these results, but to force their merits on public attention, thus exercising a power without which improvement would be slow indeed.

We have now many valuable manuals on decorative design, yet it seems strange that almost all these academical dishes are served up without the flavour of colour. So the imaginative reader waits athirst for the writer's colour thought. Although colour has an impossible vocabulary, that is to say, only the crudest hues can be definitely put in words of a telling description, yet the imagination might be washed with the mental colour-brush. For it is evident the cost of colour printing prohibits every idea being illustrated by the writer. Fortunately, the stenciller can experiment with riotous extravagance; he of all artists should grapple with the great question of colour.

Nature is not deficient in the ideas of new colour schemes offered on every hand. Every flower shows in itself so perfect a colour scheme that the adaptation might surely be made to clothe the barren nakedness of literal description with references to nature's better half.

As continual dwelling in a foreign land will accustom a stranger to think in the language of the country, so in thinking of forms we should never dissever them from colour; and as every form takes shape in the mind, let the mental colour impregnate the idea as it grows to completion. Then the wedding bells will announce the union of the Music of Form with the Mystery of Colour, and will ring out in sweet harmonies when "the joy of fashioning in fairest seeming" is consummated.

DURRANS' SELF-CLEANSING CISTERN.—This is a small cistern for drinking and cooking water in the form of an upright circular tank, mounted on an open iron framed stand so as to give access to an emptying valve in the bottom, which is dished in shape. At the top is a circular flushing pipe so that the whole of the interior surface can be washed clean whenever desired. It is only in this sense "self-cleansing," as the action of course is not automatic. The cistern has an air-tight cover.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A METROPOLITAN district meeting of the Association of Municipal and County Engineers was held at the Institution of Civil Engineers, Westminster, on Friday last week, to hear read and to discuss papers by Mr. J. Patten Barber, C.E., Islington, on "Some Suggested Amendments of the Metropolis Local Management Acts," and Mr. W. Nisbet Blair, St. Pancras, on "The Wear of Hard Wood Paving." Mr. Low, C.E., Hampstead, presided.

The Chairman, having expressed regret that Mr. Escott, of Halifax, the President, was unable to be present, called upon

Mr. J. Patten Barber to read a paper on "Some Suggested Improvements of the Metropolis Local Management Acts." In the course of his paper, the author said that as the object of it was to consider only those portions of the Metropolis Management Acts of 1856 and 1862 which relate to matters connected with a surveyor's work, reference to the Amendment Acts of 1856 and 1875 was omitted, and the two Acts referred to throughout the paper were the Metropolis Management Act, 1856 (18 and 19 Vict., c. 120) and the Amendment Act of 1862 (25 and 26 Vict., c. 102). The first Act had been in operation nearly seven years before any Act amending it or giving extended powers to the authorities constituted by such Act was passed. The Act was then amended and extended by the second Act, which came into operation in August, 1862. Although, with the exception of two short Acts passed in 1890, no attempt had since been made to amend the two Acts referred to, it was not because the necessity had not been felt by those who had to administer the Acts for more definite and comprehensive powers. For the purpose of calling the attention of Metropolitan surveyors to some of the matters which he felt were insufficiently dealt with in the two Acts, and to the want of more definite and comprehensive powers respecting the works which come under a surveyor's control, the author had prepared his paper, from which we extract the following portions:—

Sewers.—Before any person can begin to construct a sewer, a plan and section thereof must be submitted to the Vestry or District Board, and their consent in writing obtained to the proposed work. This consent, however, cannot be given until the Vestry or District Board have submitted such plan and section to the London County Council, and obtained their approval thereof in writing. It is difficult to understand the necessity for the approval of the Council in such matters, except it be to give them control over the size and inclination of sewers in order to enable them to limit the quantity of sewage and rainfall discharged into the main sewers under their jurisdiction. As, however, the various districts must be efficiently drained when built upon, a limitation of the quantity of water discharged therefrom would prevent that object being attained; and it seems undesirable that the power to control the sizes and inclinations of sewers, with a view to imposing restrictions as to the quantity of water to be discharged into the main sewers, should be continued. It was suggested, therefore, that the power of approving plans and sections of sewers to be constructed by any person other than the County Council should be vested in the Vestries and District Boards; and, as the future maintenance of such sewers devolves upon the Vestries and District Boards, they should have power to require them to be constructed in accordance with specifications and detailed drawings of the sewers, manholes, gullies, &c., prepared by their surveyors; also that the construction of such sewers should be under the control and supervision of the surveyors, and that the cost of such supervision should be paid by the persons at whose expense the sewers are constructed.

Gullies.—By Section 71, first Act, the Vestries and District Boards are compelled to trap gullies, including those discharging into the County Council's main sewers, although by Section 27, second Act, the last-mentioned gullies cannot be trapped without the consent of the Council or of their Engineer. A better arrangement would be that the Council should be compelled to trap all gullies vested in them. . . . Probably the best way of dealing with the whole matter would be to vest the gullies and all things appertaining thereto in the Vestries and District Boards.

Drainage of Existing Houses.—The extensive powers conferred by Section 73, first Act, with respect to drainage works and sanitary arrangements in existing houses are rendered inoperative by the introduction of the expression "sufficient drain." . . . An alteration of the section, giving to the authorities power to put its provisions in

force in all cases where houses were found not to be drained or fitted with sanitary appliances to their satisfaction, would make it a most useful one.

Drainage of New Houses.—The intention of Section 75, first Act, is that no house or other building shall be built or rebuilt, nor occupied, unless drains and other connected works have been provided to the satisfaction of the Surveyor to the Local Authority. But the words with which the section opens are so weak as to be altogether ineffective in preventing the acts against which the section is directed. Instead of the expression "it shall not be lawful," words should be introduced forbidding the acts referred to, and there should be a penalty for a breach of the provisions of the section. Drainage into cesspools, which is permitted by this section, should be prohibited. Section 76, first Act, contains the provisions by which the making of drains and their accessories, as well as the other works and apparatus (except water-closets) connected therewith, is controlled by the Vestries and District Boards. . . . No provision is made requiring that either plans or sections of the proposed works shall be submitted, although these are usually demanded; should they be refused it is not clear that their production can be enforced. It is often impossible for an order to be made within the time required by Section 76 of the first Act, viz., seven days, or the fifteen days specified in Section 53 of the second Act. In order to avoid drawing up an order specifying all the details of the work in each case, the author's Vestry have adopted regulations relating to drainage and sanitary fittings, and have ordered that all such work shall be carried out in accordance with these regulations. . . . Sections 76 and 83, first Act, appear to recognise the power of the Vestry or District Board to make orders and give directions only with respect to new drainage and sanitary works, and it is doubtful whether they can exercise similar powers with regard to the reconstruction of drains. The author is of opinion that new legislation is required with regard to all drainage and sanitary work, and that a complete code of regulations governing the entire procedure with respect to such work should be drawn up and made applicable to the whole of the Metropolis, giving the Vestries and District Boards control over both the construction of new, and the reconstruction, relaying or refitting of existing work.

Breaking-up Streets.—With the increasing number of openings in the roads for gas, water, and other purposes, the sections relating to this work require amending, and enlarged powers should be conferred upon the Local Authorities for controlling the opening and reinstating of the roads. . . . Having regard to the safety and convenience of the public, and to the expense which may ultimately devolve upon the Local Authorities in consequence of the opening of the roads, it is necessary that the work should be carried out in entire conformity with conditions drawn with a view to the prevention of danger and inconvenience to the public and expense to the Local Authorities. The following are the principal requirements which are needed under this head:—

That no new mains or pipes, &c., be laid, no new pipes substituted for existing pipes until plans thereof have been submitted to and approved by the Local Authority.

The positions and depths of mains, pipes, &c.; positions of valves, hydrants, meters, &c.; as well as the description of covers to valves, &c., should be subject to the approval of the Local Authority.

The extent of road which may be opened at one time should be fixed by statute, and the duty of fencing, lighting, and watching the road occupied by the work provided for.

The Local Authority should have power to prescribe the manner of opening and reinstating roads; the work should be done under the supervision of their officers, and to the satisfaction of their Surveyor. The expense of such supervision should be paid by the persons opening the roads.

Persons opening the roads should be required to keep in repair so much of the roads as may be effected by such openings for twelve months after the openings have been filled in.

Subject to the preceding provision, power should be given to the Local Authority to repair openings in roads when such repairs are found necessary, and to recover the expenses from the persons by whom such openings were made.

Works abandoned or suffered to fall into decay to be removed by owners at request of Local Authority, who may, in case of default, remove same and recover the expenses from the owners of such works.

In the event of alterations in line or level of road, mains, pipes, &c., to be altered as required by Local Authority at expense of owners of such mains, &c.

Private Paving.—Owners of private paving adjoining the public way should, on being required by a Vestry or District Board, be compelled to alter the levels of such paving so that it shall coincide with the paving in the public way. Such a provision is frequently found necessary when the paving in a road is repaired or altered in level.

Projections.—Section 119, first Act, empowers Vestries and District Boards to require the removal of projections made since January 1, 1856, but they could not enforce such removal unless they satisfied the magistrate before whom the person who had neglected to comply with the notice requiring the removal of projections appeared, that such projections were an annoyance, or endangered or rendered less commodious the passage along the streets. It is necessary that the Vestries and District Boards should have power to prohibit all projections into or over streets, and to make regulations for controlling such as they may be willing to sanction.

The paper was concluded with some considerations on the temporary closing of streets, street improvements, and the acquisition of property.

Mr. W. Weaver, Kensington, remarked that the first point he would touch upon was the question of drainage of existing houses. The author referred to the power conferred by Section 73 of the Act, and suggested an alteration of the section, giving to the authorities power to put its provisions in force in all cases where houses were found not to be drained or fitted to sanitary appliances to their satisfaction. A power of that kind, if exercised with very great discretion, would amount to a public service; but they did not always find powers of that description exercised with the discretion which was advisable. He thought the law as it now stood, amplified by the Public Health Act, gave about as much power to the public officers as they ought to be trusted with. In his own district, there must have been some hundreds of thousands of pounds spent by owners of property, and the existing powers had been sufficient to call for that outlay. With regard to drainage, Mr. Barber was quite right in saying that there was no provision requiring plans or sections of the work to be submitted, but he had very little difficulty, and he dared say that most Metropolitan surveyors had very little difficulty, in getting plans, although there was no express provision in the Act. The question of street improvements was a very important matter, but he did not agree that they had no power to carry out works of street improvement without the sanction of the London County Council. The power to carry out such works was given by the Act of George III., known as Michael Angelo Taylor's Act, and he had carried out thousands of pounds of improvements under this Act, and never asked the sanction of the County Council.

Mr. C. Mason (St. Martin's-in-the-Fields) said that with regard to the ventilation of sewers he agreed that the obligation on vestries to ventilate sewers should be extended to the County Council as regards main sewers. With regard to the trapping of gullies he thought the onus was on the County Council. He strictly insisted upon plans of private drainage, and he thought the right to such plans should be clearly defined by the Legislature.

Continuing the discussion at an adjourned meeting,

Mr. J. T. Eayrs (West Bromwich) said that some of the points in the paper touched very closely upon provincial practice, and from what he could gather the difficulties experienced in London were also experienced in the provinces. There were two or three words by which he might supplement what had been said as to the drainage of existing houses. There appeared to be no provision in the Public Health Act to prevent anyone laying drains, provided they were properly laid. But the authority might see them properly laid, and the man could go the next week and take up the drains and relay them in any manner he chose. He did not know whether the Metropolis Management Act dealt with that; if it did not it ought to be made to do so.

Mr. Lewis Angell (South-west Ham) said that provincial surveyors had this advantage over Metropolitan surveyors, that they had the regulations of their own districts in their own hands, and there were no dual authorities. Drainage regulations could not be enforced, but owners usually fell in with the regulations. Uniform regulations for the whole of London would be desirable, but to have different regulations under different Vestries would make it very difficult for builders.

Mr. Norrington (Lambeth) said the drainage of existing houses had always been a source of trouble to London Vestries. He had known cases where they had carried their regulations into the Courts; and sometimes they had been successful, and at other times they had failed. He agreed as to the advisability of having plans, and also plans of reconstruction.

The Chairman moved a vote of thanks to Mr. Barber, which was accorded, and the further discussion was then adjourned.

Mr. W. Nisbet Blair, C.E., St. Pancras, then read a paper entitled "Notes on the Wear of Hardwood Paving, and the Weight of Traffic thereon."

In the course of his paper, the author said that in order to ascertain the rate of wear on different pieces of wood paving, and to know the actual amount of traffic thereon, observations had been taken recently with regard to some roads in St. Pancras. . . . . Between February 23 and March 11, 1893, a portion of the western end of Euston-road was repaved, and, with the special object of proving the durability of the different timbers employed, the length in question was paved in four blocks. From the line of the south side of Southampton-street, a length of 63 ft. was paved with jarrah, the next length of 63 ft. with yellow deal, the next length of 62 ft. with karri, and a closing length of 49 ft. with yellow deal. The wear upon these different lengths had been recently measured, and might be taken as at three years from the date of laying. It proved to be $\frac{1}{4}$ in. on the jarrah, $\frac{1}{4}$ in. on the karri, and $1\frac{3}{8}$ in. on the deal blocks. These measurements were taken in the centre line of traffic where the wear might be regarded as greatest, and at about the centre of each length of wood. It was found that the reduction in depth was the same on both sides of the road. These figures were equivalent to $\frac{1}{12}$ in. per annum on the jarrah and karri, and $\frac{11}{24}$ in. on the deal, and the relative rates of wear were as 1 to 6. It should be mentioned that this portion of the road had electric lamps placed at intervals along the centre of the road, so causing a marked division in the lines of traffic passing eastward and westward. The whole width of the carriage-way from kerb to kerb was 33 ft. 9 in., of which 15 ft. 3 in. forms the available width on the north side of the refuges upon which the electric-lamps stand, and 14 ft. 10 in. the width on the south side of the refuges, the refuges occupying 3 ft. 8 in. A complete record of the traffic during seven days, including both night and day continuously, was taken between July 14 and 21, 1895 . . . The numbers of the different classes of vehicles were afterwards multiplied by their weights, giving the total weight for each day. The results showed that during the seven days 110,977 tons of traffic, *i.e.*, vehicles and their loads, not including horses, passed along this portion of the road. This might be taken as equal to 5,770,800 per annum, or 575,544 tons per yard in width per annum. The omnibus traffic during the week amounted to 8,575 tons, or 7·72 per cent. of the total traffic. The first four days under observation were dry and the last three days wet, but during the week the observations showed that no horses fell upon the length of road in question. Observations both as to wear and traffic were also obtained upon another length of Euston-road, at St. Pancras Church. This portion of the road was paved with jarrah blocks between April 30 and May 24, 1894. The road had therefore been under traffic for say $1\frac{3}{4}$ years, and the wear had been very carefully measured owing to an opportunity afforded by a water trench which completely crossed the road from kerb to kerb. The blocks were exactly 5 in. deep when laid. The greatest reduction was $\frac{5}{16}$ in. at 12 ft. from the kerb on the south side, and $\frac{3}{16}$ at about the same distance from the north side. The greatest wear was, therefore, ·18 of an inch, or less than $\frac{1}{5}$ in. per annum. The record of traffic taken near this trench at a point where the road is 38 ft. 4 in. wide, showed that during seven days from August 26 to September 2, 1895, 101,063 tons passed in the week, or 5,255,276 tons per annum, or 411,318 tons per yard in width per annum. The weight of omnibus traffic included in the above was 32,113 tons per week, which was equal to 31·8 per cent. of the total weight of traffic. The total number of vehicles during the week was 67,153, of which 12,677 were omnibuses, their proportion being 19 per cent. of the total number. During the week under observation the road was described as in a greasy condition, with the result that seven horses fell. The author had referred to weight of omnibus traffic as distinct from the remainder, as he believed that the effect of omnibus traffic upon a roadway was very much greater than an equal weight of general traffic, and it remained to be

seen whether the second instance described, with 31·8 per cent. of omnibus traffic, wears better or worse than the first case, where omnibus traffic was only 7·72 per cent., though the total traffic was about 40 per cent. greater in the first case than in the second.

Mr. J. P. Norrington, surveyor, Lambeth, then read a supplementary paper on "Wood Paving." Having given a list of the roads paved with hard wood in Lambeth, Mr. Norrington said the method adopted by the Vestry was to purchase the timber in planks, 9 by 3, the price varying from 5*l.* 19s. to 6*l.* 2s. 6d. per load, which included barging alongside the Vestry's wharf. It was then unloaded by the Vestry's men and sawn into blocks. It was customary to estimate that 640 blocks, 4⅛ in. in depth, could be cut from one load, which brought the price per thousand blocks to 9*l.* 11s., the cost of cutting being 3s. 7d. per thousand. In a previous paper he recommended jarrah and karri, and he now recommended that the use of other Australian woods, of more or less equal quality, provided they could be supplied at reasonable prices, should be encouraged. The following were some of the woods which appeared suitable for wood paving:—Karri, Jarrah, Ironbark, Blackbutt, Mahogany, Tallowwood.

Mr. C. Mason (St. Martin's-in-the-Fields) said that in the statistics prepared in his district the average wear of jarrah was ¾ in., and of karri ⅝ in. With an exceptionally heavy traffic he had found no difference in the wear of blocks with a ⅜ in. joint and blocks laid with a close joint, though he believed the latter to be the proper way to lay wood paving.

Mr. Yabbicum said they had been trying hard woods in Bristol for three years, and the results of their experience had been such that the Corporation had decided to extend their use.

Mr. Low (Hampstead) said he did not find anything like the expansion spoken of by Mr. Mason. He had found a 4-in. expansion joint quite sufficient in a road of 60 ft. wide.

A vote of thanks having been accorded to the authors of the paper, Mr. Blair and Mr. Norrington responded, and the proceedings terminated.

LONDON'S NEW BUILDING ACT.

A LECTURE entitled "The Building Acts of London: Thoughts and Suggestions," was delivered by Mr. Robert Williams, A.R.I.B.A., at the London Reform Union Conference Room, Arundel-street, W.C., on Tuesday last week. Mr. W. B. Yates, L.C.C., presided.

The lecturer briefly traced the history of the making of building laws applicable to London. He alluded to Acts passed dealing with paving, rebuilding, the prevention of over building, &c., and went on to say that the Building Act of 1667, enacted that all buildings should be of brick or stone, and the walls were specified to be much thicker than had since become the rule. This Act changed Mediæval London into a hideous city of brick. From time to time, other Acts relating to sewers and streets were made, but it was not until 1844 that a really comprehensive Building Act was passed. This was followed by the Act of 1855, together with the Metropolis Management Act. In 1894 the Building Acts of 1844 and 1855, with their amending Acts, gave way to the new London Building Act. In considering a few points only of that Act, and especially those wherein it failed, it would be well to glance at the working of the Act which had been in existence since 1855, and during the operation of which London's population increased from 2½ millions to 5 millions, so that the dwelling accommodation had to be nearly doubled. They could safely say that during those twenty-nine years quite half of London had been built—probably much more, and that work had been done by as bad a class of speculators as ever graced a gold-mining venture, or worked a stock exchange. During that Act the invention of the block-dwelling system was perfected. The ingenuity of man could not invent an Act superior to that of 1855 for cramming people on to land and for turning them into gold. In the matter of light, air, and space that Act was a decided step in the rear of the Act of 1844, which provided for light and air by ordering that no houses should be built any higher than the street in front of them was wide, and because of this he was bound to come to the conclusion that the landlords and speculators had a strong hand in the making of the 1855 Act. Between the years 1844 and 1855 there was a considerable increase of population, and about the year 1853 block-dwellings were evolved; the first, called the "Metropolitan Buildings," contained a population of 1,343, with a death-rate of only 7 per 1,000 per annum. But block-dwellings could not be built under the then Act unless they were in a street as wide as the blocks were high. This, together with the greater cubic space allowed in the rooms, was the very reason of their greater salubrity over the slums, and the consequent low death-rate. But the foolish people made themselves believe that there was something in the block itself which was good; so they managed to get the restrictions as to height removed, and then came the idea of cramming by blocks, which led to a very considerable increase in the death-rate among the tenants. It must be understood that he did not condemn a properly constructed collective building; on the contrary, he believed they would one day arrive at very beautiful buildings of that description. The lecturer, by the aid of diagrams, then gave instances of the working of the Act of 1855, and what led to the new Act, pointing out particularly the way in which slum property had developed. Referring to the density of cities, he said that Dr. Richardson had laid down that twenty-five people to the acre was sufficient in any city. That seemed small, but taking London's area, including streets, open spaces, gardens, &c., it had a population of only fifty-seven to the acre, or a little more than double. Taking parts of the City, however, they found that Shoreditch had 191, Whitechapel 196, some of the model dwellings 3,000, and some of the rookeries as many as 3,600. These figures certainly showed the need of the passing of a fresh Act. A town, with all the necessary public buildings and spaces, was closely packed when there was a population of twenty-six to the acre. Dealing with the efforts made to get the 1894 Act passed, Mr. Williams said the main object in seeking a new Act was the desire on the part of the County Council to provide a little more light and air about dwellings and workplaces. The lecturer explained diagrams showing, amongst other things, the gain of space in connexion with building areas under the new Act; and he then went on to point out how the provisions for open areas to houses to be inhabited by the working classes could be evaded. Another point was that Section 212, which exempted from the provisions of the new Act houses for which contracts had been made prior to its coming into law, had unfortunately been held by the Courts to exempt in the case of a general contract to build at some undefined future date, and not only where a contract existed to erect a specific building. The lecturer next referred to the control of District Surveyors, and, mentioning that there was to be an Act to give certain powers to local bodies, urged that if his hearers had anything to do with such authorities, they would, above all things, not allow the control to be transferred from the County Council to them. Then the new Act had a clause dealing with the erection of buildings on low-lying ground, but it did not altogether meet the case, and a rule should be made absolute that all buildings must be, say, 2 ft. above Trinity high-water mark. Adverting to the City warehouses, the lecturer said that some 38,000 persons slept in the City nightly, and about 264,000 worked there in varying grades. A great number worked in cellars and other places, in connexion with which the Act, he contended, did not provide for sufficient air and light. An amendment should be passed for further ventilation, and he did not see why there should not also be an area to every warehouse. Again, the Act was not clear with regard to underground rooms, and to some extent it conflicted with the Public Health Act; it should be laid down definitely that the ceiling of every habitable basement should be not less than 3 ft. above the level of the pavement, irrespective of any area at the rear.

In the course of the discussion, the Chairman emphasised one or two of the points raised by Mr. Williams, and added that the 1894 Act was really a compromise. There was considerable opposition to it, and the Council had to give way on many points; it was therefore not so strong and satisfactory as many would have liked it to be.

Mr. Henry Lovegrove considered the provisions relating to model dwellings constituted one of the best features of the new Act.

A cordial vote of thanks was passed to the lecturer at the close.

THE SHELLEY THEATRE, CHELSEA.—The once famous "Shelley's Theatre," in Tite-street, Chelsea, is about to be demolished, and the freehold site to be brought under the hammer, at the Auction Mart, early in May, by Mr. Walter Hall, of Chancery-lane

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS:

ANNUAL DINNER.

THE annual dinner of this Institution took place at the King's Hall, Holborn Restaurant, on the 29th ult., when Mr. H. Wells, C.C. (Messrs. Martin Wells & Co.), took the chair. The Chairman was supported by Messrs. J. Dixon, L.C.C., Alfred Wells, Maton, W. H. Pertwee, and others, the company numbering 425.

The toast of "The Queen, Prince of Wales, and Royal Family" having been honoured,

Mr. C. Powell proposed "The Architects and Surveyors."

Mr. W. H. Pertwee, who responded, referred to the conscientious way in which most builders foremen and clerks of works carried out their duties, for doing which they deserved the thanks of the architectural profession.

Mr. W. H. Sharpington, Hon. Sec., then proposed the toast of the "Builders and Contractors," and in the course of his remarks he said that a few years ago the very existence of builders as such was threatened; but so long as there were builders and contractors such as those who had presided at their annual dinner from year to year, builders' foremen and clerks of works would not desire any departure from the present system of private enterprise.

Mr. Edge briefly responded.

Mr. J. Beer then gave the toast of "The Governors, Trustees, Donors, Honorary Subscribers, and Visitors." Without the help which their Institution derived from the honorary subscribers and donors much good work would have to be curtailed, as the subscriptions derived from the ordinary members were insufficient to meet the annual demand upon the pension list. He added that every case which came before them was considered on its merits, and unless the cases were deserving ones no grant was made. The Institution was not a Trade Union society: they existed for the purpose of helping those who could not help themselves.

Mr. R. Adams, in responding, said that their funds were economically and carefully administered, but in his opinion the Institution could be made more beneficial to its members if it could also be made a savings bank.

Mr. J. Dixon, L.C.C., responded for the visitors.

The Chairman then briefly proposed the toast of the evening, "The Provident Institution of Builders' Foremen and Clerks of Works." It was, he said, a great pleasure to preside over a larger gathering than they had ever had before on such an occasion, and he had also great pleasure in announcing that the total of the subscriptions promised during the evening amounted to 126*l.* 18s. 6d. In proof of the benefits to be derived from the Iinstitution, he added that one of their pensioners, a lady, had received as much as 423*l.* 6s. from their funds. The Institution was deserving of every support from architects, surveyors, and those connected with the building trades.

Mr. J. W. H. Bedford replied, stating that during the past forty-five years thirty-one male pensioners had received 2,747*l.* in the way of pensions; forty-seven women had received during that period as much as 5,894*l.*; nine orphans 316*l.*; and afflicted members 306*l.*

Mr. J. Stapleton gave the toast of "The Chairman," who replied.

Other toasts were "The Deputy-chairman. Mr. W. H. Sharpington," proposed by Mr. Alfred Ramage; and "The Press," proposed by the Deputy-chairman, and responded to by our representative.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held at the County Hall, Spring-gardens, on Tuesday, Sir Arthur Arnold, Chairman, presiding.

Loans.—Upon the recommendation of the Finance Committee, it was agreed to lend the Newington Vestry 5,000*l.* for reconstructing pipe sewers; the Fulham Vestry 1,400*l.* for the construction of an underground convenience at Walham-green; and the Marylebone Baths Commissioners 20,000*l.* towards the erection of baths and washhouses.

The Water Question.—The Joint Parliamentary and Water Committee reported that the second reading of the eight London Waterworks Bills now before the House of Commons had been

adjourned to the 13th inst. The Committee proceeded to say:—

"We have most carefully considered what action should then be taken, and have come to the conclusion that we must give a certain discretion to the members in charge of the Bills, seeing that circumstances may arise which we cannot at present forecast. An important factor is, of course, the probability of the Government making a declaration of policy on the water question. We may point out that the Council will always be able to take such subsequent action as it may think best, in view of the circumstances that may arise, retaining as it does full control over the Bills, but it appears to us desirable, from every point of view, that the Council should give the necessary authority to move the second reading. We therefore unanimously recommend—That the members in charge of the Bills be authorised to move the second reading of the Chelsea, East London, Grand Junction, Kent, New River, and West Middlesex Waterworks (Transfer) Bills."

The Earl of Onslow moved an amendment to defer the consideration of the matter for a week, which, on a division, was rejected by 59 to 47.

Sir J. Lubbock, M.P., then moved an amendment as follows:—"That in order to maintain the position of the suspended Bills, members in charge of them be authorised to move the second reading, with a view to a further adjournment." The right hon. gentleman explained that the object of the amendment was to keep these Bills in suspension until after the promised statement of the Government on the water question had been made. If they were allowed to be read a second time, forthwith they would go straight to a Select Committee, and all control of them would be lost. That was not desirable, but he was quite sure that if these Bills were sought to be prematurely forced to a second reading they would be thrown out.

Mr. Whitmore, M.P., seconded the amendment.

After a lengthy discussion, the Council divided:—For the amendment, 37; against, 57. The Committee's recommendation was then agreed to.

The Committee further reported:—

"Last year considerable technical difficulty arose as to the Bill for raising the money which would be required for the purchase of the water undertakings, and we are of opinion that the simplest method would be that the matter should be dealt with by the Committee considering the Transfer Bills. We therefore recommend that the members in charge of the Transfer Bills be authorised to move an instruction to the Committee of Parliament to which the Bills may be referred providing that in the event of a transfer of the water companies' undertakings being sanctioned by Parliament, the Committee should take into consideration the terms on which the money should be raised for the purpose of carrying out the purchase, and should have power to make the necessary provisions in the Bills."

This was agreed to.

Improvement Scheme, Shoreditch.—On the recommendation of the Public Health and Housing Committee it was agreed:—

"That, subject to an estimate to be submitted to the Council by the Finance Committee as required by the statute, the Council do contribute 27,500*l.* towards the expenses of the Vestry of Shoreditch in carrying into effect the Moira-place and Plumber's-place, Shoreditch, Improvement Scheme, undertaken by the vestry under Part II. of the Housing of the Working Classes Act, 1890, as sanctioned and confirmed by the Local Government Board."

Improvement Scheme, Deptford.—The same Committee recommended, and it was agreed:—

"(*a*) That the Council do rescind its resolution of November 4 last with respect to the Mill-lane, Deptford, Improvement Scheme, so far as it directs the accommodation of 570 persons on the area, and the erection of a common lodging-house thereon.

(*b*) That the solicitor be instructed to apply to the Local Government Board for an order permitting the modification of the Mill-lane, Deptford, Improvement Scheme, so as to reduce the number of persons to be accommodated on the area to not less than 300.'

Highgate Hill Steep-grade Tramway.—It was agreed, on the recommendation of the Highways Committee, that the Council should purchase for 2,000*l.* the Highgate Hill steep-grade tramway.

Formation of Streets, St. Germans Estate, Hither Green.—On the recommendation of the Building Act Committee it was agreed that an order be sealed and issued to Messrs. T. Batterbury and G. F. Logsdail, sanctioning the formation or laying out of twelve streets, 40 ft. wide, for carriage traffic, on St. Germans estate, Hither Green, and the widening of Hither Green-lane, and that the names St. Fillan's-road, Torridon-road, Ardgowan-road, Minard-road, Broadfield-road, Wellmeadow-road, Springbank-road, Duncrievie-road, Arngask-road, Fordel-road, Glenfarg-road, and Sandhurst-road be approved for the new streets.

Open Spaces about Buildings.—The same Committee recommended, and it was agreed, that the Council do allow the erection of Blocks II. and III. of proposed residential flats, to be called St. Thomas's Mansions, on the east side of Stangate, Westminster Bridge-road, on the applications of Messrs. Boehmer and Gibbs, on behalf of Mr. T. L. Green, subject to certain conditions.

Hampstead Heath.—Sir John Hutton asked the Chairman of the Parks Committee how far the charge was true made in an influentially signed petition sent to the Committee that the wild and picturesque appearance of Hampstead Heath was being destroyed by the destruction of sandbanks and knolls, the cutting and burning of the gorse bushes, and the filling up of small ponds with ashes and sand.

Mr. Fletcher, the Chairman of the Committee, replied that the statement made in the petition must have been made under a misapprehension. The Council's employees were constantly at work repairing damage which was caused by so many persons using the Heath. Ponds had not been filled up, and the endeavours of the Committee were directed to preserving the natural beauties of the Heath. With regard to the gorse bushes, all that had been done was to prune them, which, according to the highest authorities, was the best method of preserving them.

The Council adjourned at 7.30 o'clock.

ENGINEERING SOCIETIES.

THE CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—At the ordinary meeting of this Society on the 27th ult. a lecture was delivered by Mr. A. S. E. Ackermann, of the City and Guilds of London Technical Institute at South Kensington, on "Testing the Materials of Construction." The lecturer entered into the method of arriving at the various formulæ used in connexion with the subject, the special methods required for testing different substances, and he explained one or two of the more recent special instruments used in connexion with testing. He also described the diagramatic method of arriving at results, and showed various typical samples of test-pieces, and drew special attention to the results obtained in producing rods by means of Dicks' squirting process, and the good effect resulting, especially in connexion with aluminium. ——On the 29th ult. the members of the Society visited the extension works of the Surrey Commercial Dock Company, now in course of construction under the direction of Mr. J. Wolf Barry, C.B., C.E. The extension works will, when completed, form an important addition to the docks of London, as they will permit of vessels drawing 30 ft. of water being docked, and docked in a position in the heart of London and not at a distance so far away from it as to necessitate a railway journey, and an additional handling of goods in consequence thereof, before they are distributed. The visitors were conducted over the works by Mr. Bennet, the Resident Engineer. Mr. E. H. G. Brewster, C.E., M.I.M.E., Past-President of the Society, acted as its representative in the absence of the President, Mr. S. à Court, A.M.I.C.E.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on Monday evening, Mr. S. Herbert Cox, President, in the chair, a paper was read by Mr. T. H. Brigg on "The Mechanics of Horse Haulage." The author pointed out that it was well known—first, that it is easier for a horse to draw a two-wheeled cart up a hill if the load be put forward; and, secondly, that on the level or going down hill the load should be placed at the back. The principle involved in the first case is, that a horse can pull and exercise his force better when the weight is applied so as to hold him more firmly to the ground; whilst, in the second case, when a horse does not require to exert much force to keep the load in motion, he should be relieved of all the burden possible, and even himself be partially carried, in order to save his legs both from physical exertion and percussion, thus enabling him to travel further and easier. Exactly the same principles, only to a greater extent, apply to horses drawing four-wheeled wagons, &c., with their heavier loads, though perhaps the application of the principle is not so obvious to the ordinary observer as in the case of two-wheeled vehicles. The author explained that his system of attaching draught animals to vehicles is one which automatically confers those mechanical conditions which enable them to do the most work at the least cost. In a perfectly simple manner the shafts of both two and four-wheeled vehicles are made to constitute the necessary mechanical levers, which are so actuated by the horse's own pull, and by an automatic upward lift, that at one time the horse makes himself equal to a much bigger and heavier horse, therefore can pull a bigger load, whilst at other times he is equal to a strong but lighter horse, thus able to move along with ease and comfort. The acting and co-acting forces are effective in causing the wheels, at certain convenient times, to ease the horse by carrying a part of his weight; whereas, at other times, when climbing hills and starting loads, &c., the horse is enabled, automatically, to transfer such a proportion of the load to his own body as the condition of the road and load may require. In this way his feet not only obtain a better grip upon the ground, but his body gains a twofold mechanical advantage over his load. With the new system there is no possibility of the horse having to carry a load down hill or on level ground as with the old system. The horse will maintain a good and sprightly action over a greater period of time, because the attachment avoids needless hammering of his legs and feet, thus causing him less pain, less exhaustion, and giving the animal greater speed and power of endurance. By the Brigg attachment the author showed that the horse's useful life is, in many cases, more than doubled, for he is not hampered, on good road, by having to carry any portion of the load or vehicle, but the reverse; thus his energy, his legs, and his feet are effectually and profitably preserved, and the author claims that it practically gives a new life to old horses.

ARCHITECTURAL SOCIETIES.

CARLISLE ARCHITECTURAL, ENGINEERING, AND SURVEYING SOCIETY.—A meeting of this Society was held in the Town Hall on Tuesday evening, when a paper was read by Mr. Drinkwater Butt on "Some Cumbrian Antiquities," illustrated throughout by lime-light views. The lecturer commenced by referring to the Roman remains which had been found at Birdoswald and Carlisle. Mr. Butt also gave a very interesting account of the Roman Wall, describing all inscriptions, tombstones, and the various camps which have been found along the wall throughout Cumberland. The lecturer concluded by mentioning the ancient remains in Cumberland, in which the names of Scaleby Castle, Naworth Castle, and Lanercost Priory were referred to.

YORK ARCHITECTURAL SOCIETY.—The fourth ordinary meeting of the winter session of this Society was held at the Church Institute, Lendal, on the 28th ult. Mr. Henry Perkin took the chair, and Mr. A. H. Claypoole gave a lecture on "The Ventilation of Buildings." Having pointed out the urgent necessity of good ventilation as a matter of vital importance to the public health, he dealt with the composition of the air and the effect of both animal and vegetable life upon it. Comparisons were made between the methods of natural and mechanical ventilation, and the action of the air currents resulting from each system. Descriptions of the Vacuum and Plenum systems of mechanical ventilation were given, illustrated by plans and diagrams. An animated discussion followed, and was taken part in by the Chairman, Messrs. Pollard, Burleigh, and Pegge. A vote of thanks to the lecturer was moved by Mr. N. R. Yeomans and seconded by Mr. George Benson, both of whom took part in the discussion on the paper.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The annual meeting of this Society has just been held. The annual report showed a satisfactory balance-sheet and a large increase of membership, including seventeen from the Three Towns district, where it is proposed to establish a branch of the Exeter Society. To further promote this object, it was decided that the annual meetings should in future be held alternately at Exeter and Plymouth. A vote of thanks was passed to the retiring President (Mr. A. Thorne) at the conclusion of his address, and he was unanimously re-elected for another year. Mr. I. Crocker was also re-elected vice-president. Messrs. I. Pinn and F. Commin, Mr. J. Hine, Plymouth, and Mr. Luff, Devonport, were elected members of the Council, Mr. O. Ralling hon. treasurer, and Mr. Harbottle Reed hon. secretary.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The members of the Edinburgh Architectural Association visited the M'Ewan Hall on Saturday last week, and were conducted over the building by the architect, Dr. Rowand Anderson. All the principal features of the building were explained. When the party had concluded their inspection a vote of thanks was accorded to Dr. Anderson for his kindness in inviting the Association to the hall, and giving the members a description of the building. Dr. Anderson, in acknowledging the vote of thanks, mentioned that the building was to be lighted by electricity, but that whether it would be by arc lamps or incandescent had not yet been decided. They were experimenting at present, and they had found that a mixture of the two lights would not do, while, on the other hand, the shadows cast by the arc-light when used alone were disagreeably hard.

GLASGOW ARCHITECTURAL ASSOCIATION.—The eighteenth annual business meeting of this association was held in the rooms on Tuesday evening. The President, Mr. A. U. Paterson, M.A., in the chair. The committee's report of the past session's work showed that it had been the most successful in the history of the Association, 67 new members having been admitted, making a total membership at this date of 165. The office-bearers were then elected as follows: — Mr. Alexander McGibbon, A.R.I.B.A., Honorary President; Mr. Wm. Tait Conner, A.R.I.B.A., President; Mr. George Hill, A.R.I.B.A., and Mr. Robert J. Gildard, Vice-Presidents; Mr. Hugh Dale and Mr. Charles E. Whitelaw, Hon. Secretaries; Mr. Wm. J. Blaine, Hon. Treasurer; Mr. John Fairweather, A.R.I.B.A., Hon. Librarian; Mr. A. N. Paterson, M.A., Mr. James Craigie, Mr. Jas. Salmon, and Mr. Robert Walker, General Committee.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CLASSES.—On Saturday afternoon last the students attending these classes visited the new Dowanhill Public School. Mr. Balfour, of Messrs. Steel & Balfour, the architects, guided the party through the building and explained the various points of interest. Special attention was paid to the "plenum" system of ventilation used in the building, which was put in operation for the students to inspect, also in the large hall in the centre of the school. At the close Professor Gourlay proposed a hearty vote of thanks to Mr. Balfour.

Illustrations.

EXAMPLES OF ROMANESQUE ARCHITECTURE.

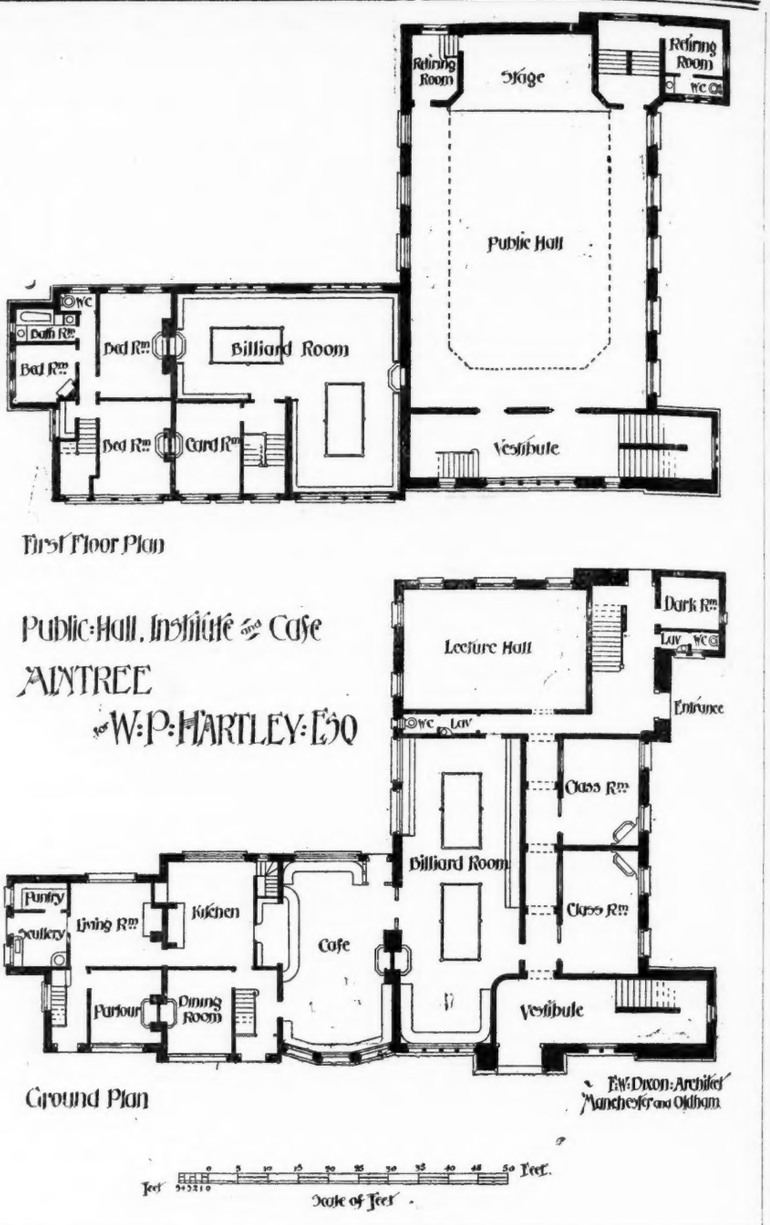
WE have devoted four pages of our illustration plates to the two remarkable churches of the end of the twelfth century, mentioned in the outset of Professor Aitchison's fifth Royal Academy Lecture given on another page, St. Trophime, Arles, and St. Gilles, Gard.*

Both are most interesting specimens of that union of more or less incongruous elements which is characteristic of Romanesque architecture. The details of the porch of St. Gilles Church, especially, form an extraordinary medley of things which we are accustomed to regard as quite distinct; the proportion of the shafts and capitals is Gothic, but the foliage of the caps, and the cornice over them, are Classic; the medallions of intertwined circles in the pedestal, with animals carved in them, are Byzantine in character; the statues have a classic element in their treatment and drapery, while the griffins under their feet are grimly mediæval; the whole thing is typical of that shaking up of the elements of new and old art out of which mediæval architecture was to arise.

HOUSE, LINGFIELD.

THIS house is built overlooking the Racecourse, and was carried out to harmonise with the old work for which this village is so noted, the materials being dark local tiles for roof coverings and bright-orange weather tiling. The stone was dug on the estate. The builder was Mr. E. Steer, of East Grinstead. E. TURNER POWELL.

* For unavoidable causes the two sets of plates, which are by two different processes, could not be placed together; the St. Trophime illustrations, which are from blocks, will be found at the back of the lithographs.



DESIGN FOR A COUNTRY HOUSE.

THIS design, by Mr. A. C. Breden, was exhibited at the Royal Academy last year. There is a quiet picturesqueness in the exterior which is pleasing, and there are some agreeable points in the plan, and also some oversights. The bay windows to the dining-room and drawing-room may form very pleasant nooks for retired conversation, but are not planned so as to light the rooms well; the other window to the dining room, placed so as to look out immediately on the front doorsteps, is embarrassing for visitors; and the kitchen window is in the wrong place for lighting the cooking operations. To ignore these defects would almost imply that we were blind to them; but the house, in its main idea, is a pleasant and picturesque one nevertheless.

INSTITUTE AND CAFE, AINTREE.

OWING to the growth of Aintree, partially by reason of Mr. Hartley removing his large business there some ten years ago, and also by the development of Liverpool in that direction, a necessity has arisen for a Public Hall and Institute. This Mr. Hartley has undertaken to provide at his own cost.

The site has two frontages to the highway, one leading to Preston and the other to Wigan, and contains about two acres.

The ground-floor has large café and billiard-room, lecture-room, and class-rooms for literary and other societies.

The first floor has a second billiard-room, and the main floor of the public hall is 64 ft. by 40 ft. The hall, with balconies, will seat 700 persons. A large stage, with all the usual accessories, is provided, and there is a caretaker's residence.

Stables and a large open draw-up space, suitable for the accommodation of twenty wagons and pairs, is provided for the use of country carters, a very large number of whom pass daily with farm produce for the Liverpool market.

The grounds will be laid out for recreation, and the hall-floor will be prepared for dancing, and will also be fitted up so as to be used as a gymnasium.

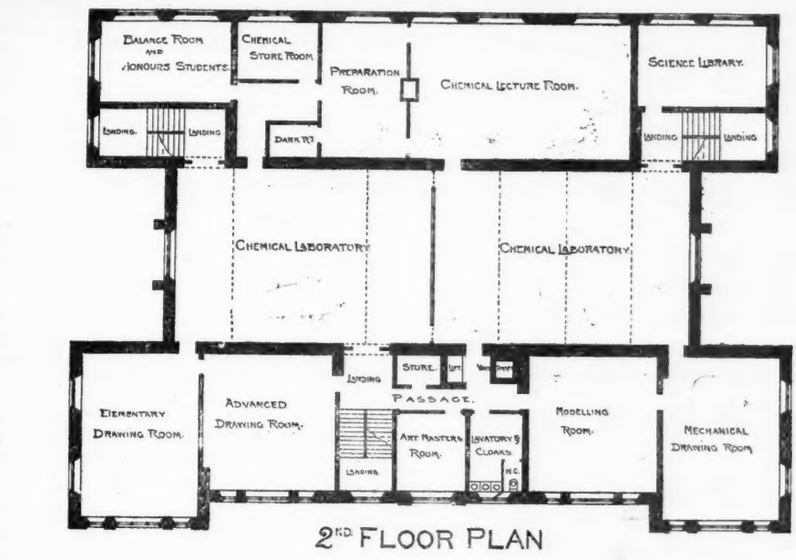
The buildings are erected from Ruabon bricks with Halifax stone dressings, and the roofs are covered with red Ruabon tiles.

The total cost, including the land, will be about 8,000*l.*

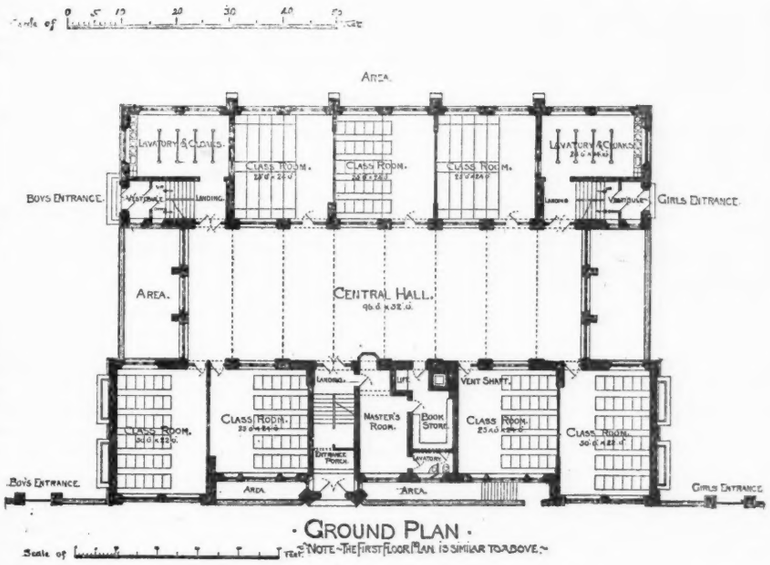
Mr. F. W. Dixon, of Manchester and Oldham, is the architect.

CENTRAL HIGHER GRADE SCHOOL, BOLTON.

CONSIDERABLE progress has been made in connection with this extensive undertaking, which is in course of erection in Great Moor-street for the Bolton School Board. In the competition for this Mr. Freeman's design was placed first by the assessor, Mr. Robson, the architect for the Education Department. The school, when completed, will provide accommodation for 1,080 children. It will be seen from the plans that the ground and first floor are devoted to the usual school purposes, the basement and second floor being utilised for the higher grade departments. A special feature of the design is the central hall, which measures 96 ft. by 32 ft., and is carried up the full height of building; the basement floor being used as a gymnasium, the top floor as a chemical laboratory. The principal entrance



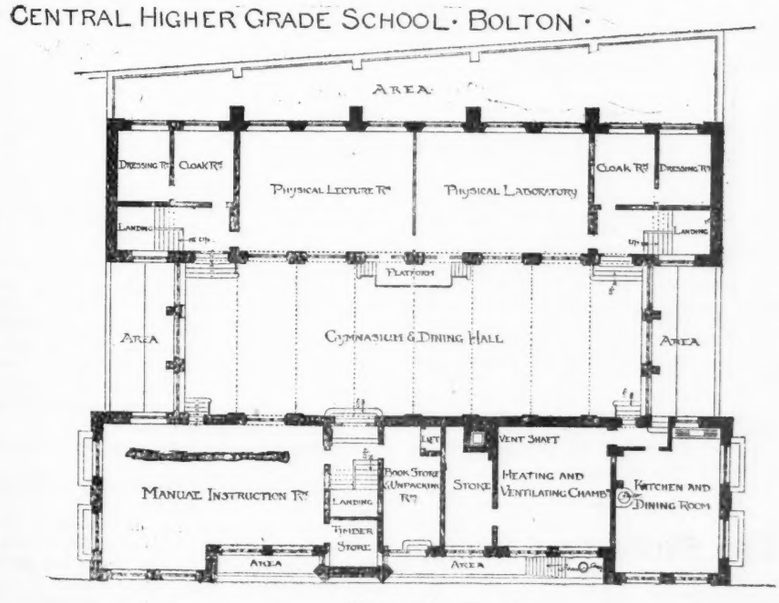
2ND FLOOR PLAN



· GROUND PLAN ·

~NOTE~THE FIRST FLOOR PLAN IS SIMILAR TO ABOVE.~

CENTRAL HIGHER GRADE SCHOOL · BOLTON ·



· BASEMENT PLAN ·

will be in Great Moor-street, the boys' and girls' entrances being at opposite ends of the school, and approached from their respective playgrounds. The elevations provide for a structure Renaissance in character, and rising to a height of 64 ft. to the ridge. The central gable over the main entrance will be surmounted by a turret, and the roofs will be covered with blue Welsh slates, relieved by bands of green slates. Local bricks will be used for the most part in the walls, these being supplemented by glazed bricks and terra-cotta dressings. The terra-cotta is being supplied by Messrs. Dennis, of Ruabon. The grouping of the building throughout has been carefully considered, and the carrying on of the educational work of the school in all its branches in the most effective way has been provided for in the internal arrangements. A cookery school and caretaker's house are also being built on the site in connection with this scheme. The general contract has been placed in the hands of Messrs. E. & D. Maginnis, of Bolton, whose tender was 20,000*l*. The architect is Mr. R. Knill Freeman, of Bolton and Manchester, and Mr. David Walch is acting as clerk of works.

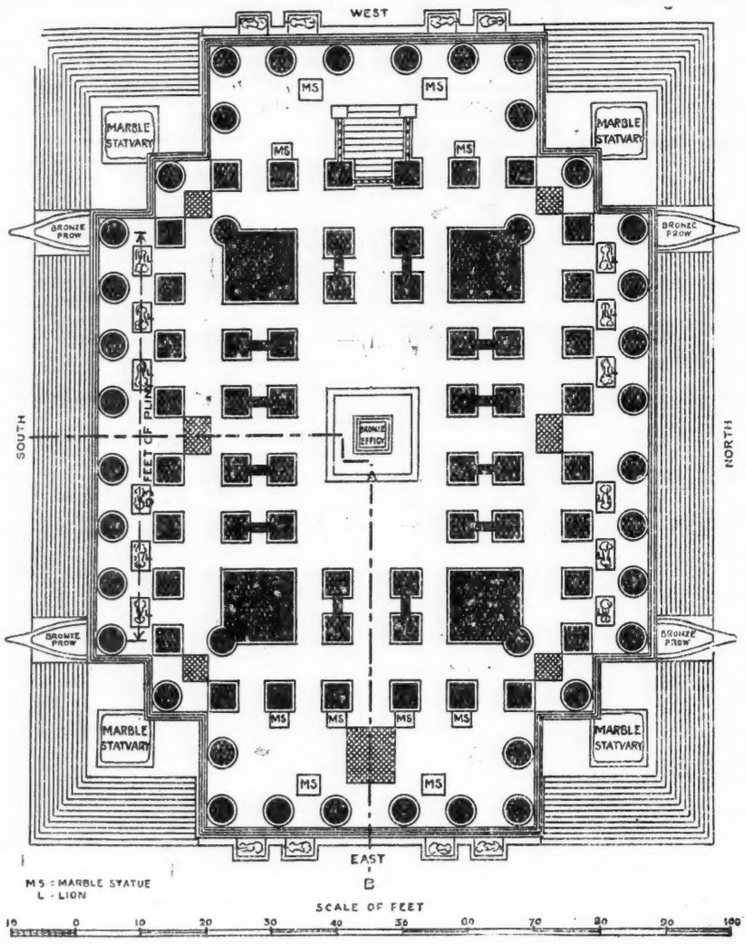
COMPETITIONS.

LAYING-OUT THE ENDCLIFFE HALL ESTATES, SHEFFIELD.—The directors of the Endcliffe Estates Company, Limited, invited architects and surveyors to send in plans for laying-out the Endcliffe Hall Estate, offering premiums of 100, 50, and 25 guineas for the first, second, and third plans in order of merit. In response to the invitation, thirty-nine sets of plans were received, and the directors requested Mr. H. E. Milner, C.E., of Westminster, to advise them. He recommended that the first premium be awarded to "Dum Spiro Spero," Messrs. J. Mack Clark and B. Powell; the second premium to "Atlas," Messrs. W. J. Lindley and Alfred Appleby; and the third to "St. Elms," Mr. W. H. Lancashire, all of Sheffield.

EMMANUEL CHURCH, EXETER.—At a meeting of the Exeter Church Extension Committee, held at the Church House, on the 3rd inst., Mr. Gould stated that in response to the advertisements for the church issued there had been 405 applications for conditions. Of this number 166 came from London, nineteen from Exeter, and the remaining inquiries were from almost every part of the kingdom. One gentleman had intimated that he should decline to compete under the conditions drawn. A great number of questions had been asked by architects, and a Sub-Committee was appointed to answer them. The inquiries being so very numerous, it was decided that the questions should be tabulated, and an answer given to each question, and a copy of the complete answers forwarded to each architect who had communicated with the Secretary.

CARPENTERS' HALL LECTURES.

MR. W. H. PREECE, C.B., delivered a lecture on "Electricity in Connexion with Building," at the Carpenters' Hall, on Wednesday evening. The chair was occupied by Sir Arthur Arnold, Chairman of the London County Council. The lecturer said that many people asked what was the relative cost of gas and electricity. His experience was that at the present moment there was practically no difference between the two. The cost of the production of electricity, however, was being reduced, and the time was not very far distant when it would be cheaper than gas; of course he was comparing the ordinary burner with the electric lamp. He claimed that the points in favour of electric light being introduced into buildings were: that it did not vitiate the air the people breathed, that it could be put where they wanted it, that they could use it when they needed it, that they could apply it to the decoration of their houses, and that it lent itself to the artistic tastes of the ladies of their households. The cost of wiring was now diminishing, and although large sums could be spent on handsome electroliers if they were required, those satisfied with plain and simple fittings could fit up their houses with electric light at a cost of about 25s. per lamp. The lecturer explained the facility with which the current of energy could be distributed throughout the house, and this he illustrated by exhibiting a doll's house fitted up with the light. Next he enlarged upon the mode of telling exactly the amount of light required for different purposes, this being based upon the fact that it was necessary to expend an energy of one watt per square foot of floor space when the lamps were 8 ft. high. But the reflective power of their walls had to be taken into consideration, and if they and the ceilings were white, half the number of lamps would give them the same light. A great point was that they must not place the light so that it would offend the eye; one of the London banks had just shown what could be done by purely reflected light, and this was now being used with wonderful effect. But electricity also generated heat; in fact, the only reason why the lamps showed so brilliant a light was because they were so largely heated. Current itself first of all produced heat before it produced light. The lecturer then showed how the energy could be applied to the heating of rooms, and all kinds of cooking utensils, &c.,



Mr. Oldfield's amended plan of Mausoleum.

and he further alluded to its usefulness in the direction of producing power for working, among other things, plant by which the air in rooms could be circulated, and by which engine-rooms, workshops, &c., could be ventilated. The energy could also be applied to the working of lifts, &c. Concluding, Mr. Preece said it would be seen that electricity possessed a superiority over all other forms of energy, and that its use added to the health, happiness, and comfort of the whole community. A hearty vote of thanks was afterwards accorded to the lecturer.

Correspondence.

To the Editor of THE BUILDER.

THE RESTORATION OF THE MAUSOLEUM.

SIR,—In the courteous notice you have given in a recent number to my conjectural restoration of the Halicarnassian Mausoleum,* you point out, amongst other criticisms which, whether I assent to them or not, I will not at present discuss, that the great piers shown in my plan of the Pteron would needlessly obstruct the view through the interior of that story and diminish the light within it. May I now ask your permission to express my acquiescence in this criticism, and to offer a slight modification of my scheme to meet your objection? In lieu of each square pier at the sides of the central area I would substitute four pilasters, connected only as shown in the accompanying plan; an alteration which, besides its improvement of the transverse view and of the internal lighting, would more nearly accord with the poet's description of the building as "hanging in empty air." It had always been my inclination to arrange the Pteron in this or some similar way. But I had already dispensed with the walls which all my predecessors had thought necessary for the support of the exceptionally heavy roof, and I was fearful of going too far in pursuit of a new theory of my own. As a mere amateur also in architecture, it seemed to me somewhat hazardous to propose an arrangement which professional critics might possibly pronounce deficient in solidity and impracticable, and I therefore decided to keep on the safer side. But now that you and other competent authorities seem to assure me that my fears were unnecessary, I am glad to bring forward an arrangement which is undoubtedly better in itself, both on literary and æsthetic grounds.

EDM. OLDFIELD.

* See *Builder* of February 22.

BUILDERS' CLERKS' INSTITUTION OF GREAT BRITAIN.

SIR,—May I be permitted space in your columns to thank the many inquirers and sympathisers who have written to me respecting this Institution.

All such will be interested to know that the provisional committee have completed the work of framing rules, &c., and have arranged for the inaugural meeting at St. James's Hall, Piccadilly, on Saturday, March 14, at 8 p.m.; and it is to be hoped that there will be a good muster, as the work of the Institution should be of the greatest interest to every clerk in the building trade, and all are earnestly invited to be present and assist the adoption of rules, election of officers, and other necessary business.

J. PEARSE BOWDITCH.
Secretary pro tem.

94, *Dalberg-road, Brixton, S.W.*

The Student's Column.

CARPENTRY AND JOINERY.—IX.

CENTRES.

CENTRES are temporary structures, generally of wood, used to support arches of brick or stone, till they have settled in position and become consolidated. The qualities of a good centre consist in its forming a rigid support for the weight of the arch stones, without varying its form to any appreciable extent throughout the whole progress of the operation, from the springing of the arch to the laying of the keystone. Centres required for the erection of small and narrow arches may consist simply of a piece of stuff cut to the requisite curve of the soffit of the arch it is proposed to build, and kept in position by wooden supports or props, as shown in fig. 121. Where the span is over 3 ft. or 4 ft., centres are generally constructed as shown in fig. 112. A centre designed for a 20 ft. arch of three bricks in thickness is shown at fig. 113. It will be observed that it is designed on the principle of the king-post truss, though some architects prefer the struts to be placed at right angles to the arch, as shown by dotted lines. This centre is supported in the middle and at each end by 6 in. by 6 in. fir posts, and interposed between such posts and the horizontal tie are driven oak wedges so that when it is required to ease the centre, the wedges are tapped gently out of position.

In the case of tunnelling or other work involving greater depth, the ribs should be placed from 2 ft. to 6 ft. apart, the distance diminishing in proportion as the weight of the structure increases.

Before entering upon the question of the design and construction of centres for wide spans, it will be well to ascertain first what proportion the total weight of the structure the centre will have to sustain.

It has been found by experiment that a stone placed upon an inclined plane does not begin to slide until that plane has an inclination of 30 deg. from the horizontal line, and until such a stone would slide upon its base, it is obvious that the centre would not contribute to its support. Moreover, this *angle of repose* reaches as much as 45 deg., with a soft stone bedded in mortar, but 32 deg. or 34 deg. generally should be calculated for. As the courses approach more nearly to the keystone so, of course, their weight on the centre increases until at last the centre has to support their whole weight. It is a useful fact to remember that when the plane of any joint becomes so much inclined that a vertical line, passing through the centre of gravity of the arch stone, does not fall within the lower bed of that stone, the whole weight of the stone may be considered as resting on the centre.

No absolute rule can be given as to the proportion of the whole weight which the centre will have to carry, as of course the ratio increases as the arch becomes flatter, but it may generally be safely assumed that the centre will not have to sustain more than two-thirds of the total weight of the arch. The following table is given by Tredgold, where P represents the pressure and W the weight of any arch stone:—

When the angle which the joint makes with the horizon is ...	34 degs.	P = ·04 W.
,, ,, ,,	36 ,,	P = ·08 W.
,, ,, ,,	38 ,,	P = ·12 W.
,, ,, ,,	40 ,,	P = ·17 W.
,, ,, ,,	42 ,,	P = ·21 W.
,, ,, ,,	44 ,,	P = ·25 W.
,, ,, ,,	46 ,,	P = ·29 W.
,, ,, ,,	48 ,,	P = ·33 W.
,, ,, ,,	50 ,,	P = ·37 W.
,, ,, ,,	52 ,,	P = ·40 W.
,, ,, ,,	54 ,,	P = ·44 W.
,, ,, ,,	56 ,,	P = ·48 W.
,, ,, ,,	58 ,,	P = ·52 W.
,, ,, ,,	60 ,,	P = ·54 W.

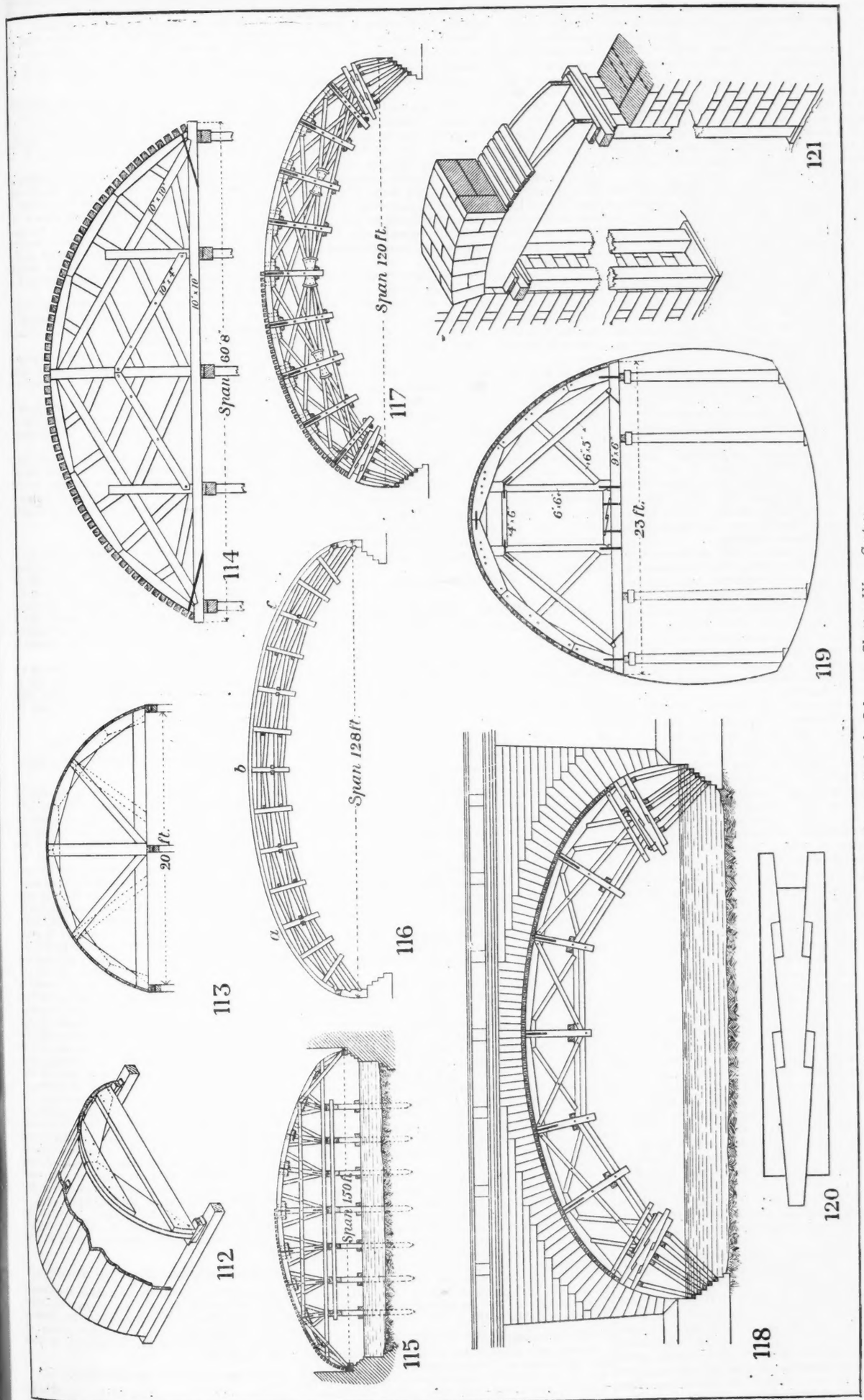
From the above it will be easy to estimate the weight upon a centre at any period of its construction, as well as the whole weight it has ultimately to sustain.

From the above remarks it will be obvious that it would be absurd to make the centre equally strong in all its points. Failures of centres have frequently occurred through the weight at the haunches having forced up the framing at the crown, and one of the chief objects to be borne in mind in designing centres is, that it should not undergo a change of form during any portion of the construction of the arch.

The designing of centres may, for convenience, be divided into:—

I.—*Centres supported from below at intervals.*
II.—*Centres in one span.*

I.—*Centres supported at intervals* should always be used where it is possible, as they are far more economical both in labour and material, and can more easily be depended upon to support the arch with rigidity. Fig. 114 shows the centre used for the Coldstream Bridge as designed by Smeaton, whose principal object was to divide the support equally under the weight, and at the same time to preserve such a geometrical connexion throughout the whole that, if any one pile or row of piles should settle, the incumbent weight would be supported by the remainder. He was also particular not so much to have his scantlings, which were of "East County" fir, as light as possible, but also to cut them with the least waste. This stone bridge was 25 ft. in width, and the span of the centre arch was 60 ft. 8 in. Fig. 115 is an illustration of the



Illustrations to Student's Column: Chapter IX. Centres.

112. Centre for small Span.
113. Centre for 20-ft. Span.
114. Centre used for Coldstream Bridge.
115. Centre used for Stone Bridge at Gloucester.
116. Centre used for Bridge over the Seine at Neuilly.
117. Centre used for Waterloo Bridge.
118. Centre recommended by Tredgold.
119. Centre usually used for Tunnels.
120. Detail of Continuous Wedge.
121. Centre used fo Door and Window Arche

centering for the stone bridge built by Telford at Gloucester, in which the span was 150 ft., and the rise 35 ft. The method of construction was as follows:—A level platform was prepared, on which the centre was struck out to the full size. The timber used was of Dantzic fir, in scantlings of about 15 in. square, and the piles carrying the centre were of Memel, shod with iron. Across the top of the piles a beam was laid, upon which the wedges were fixed. Each rib of the centre was then placed upon a scaffold made upon the top of the wedge pieces, and was raised into position by two cranes on the banks, aided by two barges on the river.

The scaffold was continued 30 ft. beyond the striking ends of the wedges, which were found convenient both for hoisting the ribs and for striking the centre. When the ribs were properly braced, they were covered with 4 in. sheet piling which had been previously used in the formation of the coffer dams. This centre was so successful that when the arch was keyed, its sinking did not exceed 1 in., and it was struck within the short space of three hours.

II.—*Centres in one span* have to be constructed when intermediate supports cannot be used, owing either to the uncertainty of the current or to the necessity of keeping the water-way clear. Their execution is manifestly much more difficult, owing to the precautions which must be taken to counteract the tendency of the crown to rise when the load is placed on the haunches. This is forcibly illustrated in fig. 116, which is the centre designed by Perronet for the bridge at Neuilly. A slight examination will show that when it is loaded at *a* and *c* it must rise at *b*, and the strains produced by the weight resting on any point must have been very considerable, owing to the timbers being so nearly parallel, and the strains on the joints must have been excessive.

The centre has such a light appearance, and obstructs the stream so little, that it recommended itself to many, but it is contrary to the true principles on which centres should be designed, though it is well enough adapted to sustain an equilibrated load, distributed over the whole length; but it is certainly not calculated to support a variable load without alteration from its original form. Several other designs of a similar nature have been executed for other bridges, and have been found to be equally defective.

Fig. 117 represents the centering designed by Rennie for Waterloo Bridge, and it will be seen that, owing to the numerous cross-ties, a load placed in any position could not cause the centre to be raised without reducing the length of some of these cross-ties. It is contended by some that it is complicated, and that there is an excess of strength; but there is no doubt that it is well adapted for the purpose for which it was intended. It is a modification of the centre used for Blackfriars Bridge in 1760 by Milne, though improved in construction and form.

Fig. 118 is a form of centre recommended by Tredgold, consisting of three main trusses abutting against each other, from which it is apparent that, as the arch is built up from each abutment, the load on each of the haunches being equal, provided the central truss is sufficiently stiff to resist the pressure in the direction of its length, there will be no tendency to rise in the middle. It is easy to increase the strength as required. A centre on these principles may be executed for any span to which a stone bridge may be erected. If necessary, of course, the timbers may be lengthened as described in the article on joints. All very obtuse angles should be avoided, and to secure the utmost strength timbers should be subjected as little as possible to cross strain. The girder principle, as explained in the article on "Bridges," may be advantageously used in many cases in the construction of centres.

Fig. 119 shows a very good centre, which is frequently used in the construction of tunnels. It will be seen that the framing is very similar to that of a queen-post truss, previously described in the article on "Roofs." The upper portions of the rib are made of 3-in. plank in two thicknesses, bolted together, and the ribs are usually about 3 ft. apart.

The two ribs nearest the excavation are constructed without tie-beams to avoid interfering with the raking struts.

The *construction of centres* will probably not require much explanation to those who have followed the articles on "Joints used in Carpentry" and "Roofs," but the few following particulars may be of use:—The pressure upon any beam in pounds, divided by 1,000, gives the area of the timber in pieces, or that of the least abutting joint. Where it is possible, principal beams should abut end to end; when they meet at an angle it is a good plan to let them into a cast-iron socket (see fig. 117). Timbers should intersect each other as little as possible, halving should be avoided, and those timbers which act as struts and braces should be notched upon the framing and be in pairs, one on each side of the frame, and well bolted together (see braces in fig. 119).

Ties should be used across the framing, particularly where many timbers meet, and diagonal braces between the ribs should be used to prevent lateral motion. The necessity for a sound and a rigid centre must again be urged, and as an instance of the paramount importance of this, it may be mentioned that many lives were lost when a large arch over the Derwent collapsed and fell into the river as the keystone was being placed in position. An allowance of one-third to one half is usually allowed for waste on centering, or on conversion to use.

The removal of centres is generally accomplished by the striking of the folding wedges upon which they have been placed, or of the indented blocks which fit into corresponding blocks above and below, thus forming continuous wedges. The former is illustrated in fig. 112, and the latter in figs. 117 and 120; the wedges should be well rubbed with soft-soap and blacklead before being built upon. The French method is to destroy the ends of the principal rafters by degrees, but this cannot be done so evenly, and is a source of danger to the carpenter.

Perhaps the most ingenious method consists in having an iron cylinder filled to the extent of the upper half by a cylinder of wood, the lower half being sand; when it is required to strike the centres, holes, which are previously drilled in the base, are uncorked; the sand escapes and lowers the centre. It should always be remembered that centres should be struck slowly and evenly, so that the arch may gradually take its proper bearing.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

AT the meeting of the London County Council on Tuesday, all the recommendations of the Building Act Committee in reference to the applications under the 1894 Building Act were agreed to. The following applications were granted on certain conditions:—

Lines of Frontage.

Hackney, North.—The erection of one-story shops in front of Nos. 18 and 20, Cazenove-road, Stamford-hill, on the application of Messrs. J. Parish & Son on behalf of Mr. T. Dabbs.

Hackney, Central.—The erection of an addition to the White Hart Hotel, Lower Clapton-road, on the application of Messrs. Treacher & Fisher on behalf of Mr. R. S. Chattey.

Paddington, South.—The erection of an addition to St. Stephen's National Schools, upon the site of Nos. 95 and 97, Westbourne Park-road, West, with projecting pilasters and plinths, on the application of Mr. A. T. Bolton on behalf of the Vicar and school managers.

Dulwich.—The erection of a shop on the south side of Dog-kennel-lane, adjoining East Dulwich railway station, on the application of Mr. H. G. Rovedino.

Finsbury, East.—The erection of a hospital on the south-west side of City-road, St. Luke's, between No. 160, City-road, and No. 5, Gayton-street, abutting at the rear upon Peerless-street, on the further application of Messrs. Lander and Bedells on behalf of the Royal London Ophthalmic Hospital.

Hampstead.—The erection of a one-story workshop at the rear of No. 15, the Parade, High-road, Cricklewood, and abutting upon Ebbsfleet-street, on the application of Mr. H. C. Brown.

Hampstead.—The erection of a house on the west side of Mazenod-avenue, West Hampstead, with its flank abutting upon Smyrna-road, on the application of Messrs. Booth & Fox on behalf of Mr. G. W. Cossons.

Kensington, South.—The erection of an open portico in front of No. 7, Sydney-place, Onslow-square, on the application of Mr. R. Salisbury.

Marylebone, East.—The erection of a two-story addition, at the first and second floor levels, in front of No. 28, York-terrace, Regent's Park, on the application of Messrs. J. Blyth & Co. on behalf of Mr. J. Walmesley.

St. George, Hanover-square.—The erection of inclosures to the porch in front of No. 19, Upper Brook-street, on the application of Mr. A. M. Watson on behalf of Mr. E. W. B. Willyams.

The following applications were refused:—

Lewisham.—The erection of one-story stabling on the south side of Taunton-road, Burnt Ash-road, Lee, at the rear of premises occupied by the Lee Liberal Club, on the application (further considered) of Messrs. D. & R. Kennard.

Brixton.—The erection of one-story shops in front of Nos. 91, 93, 95, and 97, St. Mark's-road, Camberwell New-road, on the further application of Mr. H. O. Wilson on behalf of Mr. H. Buckland.

Fulham.—The erection of a building in Hurlingham-road, between No. 134 and Grimston-road, with its flank abutting upon the latter road, on the application of Mr. A. Allen on behalf of Mr. F. W. Freure.

Hackney, North.—The erection of a temporary wooden addition to a coach-house at the rear of "Northolme," High-road, Upper Clapton, to abut upon a street known as Springfield, on the application of Mr. J. Stapleton on behalf of Mr. F. M. Miller.

Hampstead.—The erection of oriel windows at the first and second floor levels of six houses with shops on the west side of South-end Green-road, at the corner of Pond-street, on the application of Mr. C. Bell on behalf of Mr. W. J. Jones; as the road is less than 40 ft. wide, and it is therefore considered undesirable to permit the existing frontage at this part to be disturbed by the erection of the oriels as proposed; and, moreover, the plan submitted is inaccurate in several particulars.

Kennington.—The erection of a one-story shop in front of No. 260, Clapham-road, of the height of 18 ft., on the further application of Mr. E. Carritt on behalf of Mr. J. Sainsbury.

Poplar.—The erection of a one-story shop upon the forecourt of No. 1, Abbott-road, East India Dock-road, on the application of Mr. C. Dunch, on behalf of Mrs. Myles.

St. George, Hanover-square.—The erection of a projecting name-board at the second floor level in front of No. 16, Woodstock-street, Oxford-street, on the application of Mr. T. W. Lucas.

Wandsworth.—That no order be made with respect to the application of Mr. R. D. Hansom, on behalf of Mr. W. Fountain, for consent to the erection of a house on the west side of Mantilla-road, Tooting, with its flank abutting upon Church-lane.

Width of Way.

Hammersmith.—That the consent of the Council be not given to the retention of a one-story shop recently erected without permission on the west side of No. 199, Hammersmith-road, at less than the prescribed distance from the centre of Rose-and-Crown-lane, on the application of Messrs. Eve & Son on behalf of Mr. Ayres: and that the solicitor do continue the police-court proceedings directed to be taken in the matter.

Kennington.—That consent be not given to the erection of a one-story building at the rear of No. 162, Kennington-park-road, to abut upon Ravensdon-street, on the application of Mr. H. Mallett on behalf of Mr. Wills.

Line of Fronts and Width of Way.

The Council agreed to the following recommendations:—

Whitechapel.—That the consent of the Council be given to the erection of a one-story porch in front of All Saints' National Schools, Buxton-street, on the application (further considered) of Mr. A. Cox on behalf of the Rev. J. Basil Rust and the Committee of Managers of the Schools.

Fulham.—That the consent of the Council be not given to the erection of houses with one-story shops in front, and projecting bays over, on the west side of Munster-road, between Colehill-lane and No. 1, Gowan-terrace, on the application of Mr. J. G. Denton on behalf of Mr. E. Saunders; it being considered that the projection of the shops and bay windows to the four houses in Munster-road, between Vera-road and No. 1, Gowan-terrace, should not exceed 2 ft., and that the whole of the ground in front of the several proposed buildings should be dedicated to and left open for the use of the public.

Hackney, Central.—That the consent of the Council be given to the erection of two workshops or stables, with living rooms over, at the rear of Nos. 8 and 9, Clapton-square, and fronting upon Clarence-mews, on the further application of Mr. F. J. Garlick on behalf of Mr. C. W. Matthews.

Walworth.—That the consent of the Council be not given to the erection of a hall and class-rooms on the site of Nos. 92 and 94, New Kent-road, Newington, at the corner of Gurney-street, on the further application of Mr. D. Young on behalf of the trustees of the Murphy Memorial Hall; it being deemed inexpedient to permit the existing main frontage in this part of New Kent-road to be disturbed by the erection of the building, which is proposed to be 40 ft. high. Mr. Young to be informed that an application, if made for consent to a porch or a one-story addition, would be considered.

Width of Way and Height of Buildings.

Finsbury, East.—That the consent of the Council be given to the erection of a warehouse with stable on the west side of Golden-lane, St. Luke's, between Turk's Head-court and French-alley, on the further application of Mr. L. Solomon on behalf of Mr. C. Bayer.

Open Spaces about Buildings.

Chelsea.—That the sanction of the Council be not given to a modification of so much of the provisions of Part V. of the London Building Act, 1894,

with regard to the extension above the diagonal line as directed to be drawn by section 41 of that Act, so far as relates to portions of the back of three blocks of residential flats proposed to be erected on the east side of North-street, between Pavilion-road and Charlotte-street, on the application (further considered) of Mr. E. J. Sadgrove on behalf of the Belgravia Freehold Estate Company, Limited; as having regard to the crowded nature of the site and the narrowness of Cross-street and Pavilion-road, it is considered inexpedient to allow any portion of the buildings to extend above the diagonal line as directed to be drawn; and, moreover, portions of the proposed buildings are not shown on the deposited block plan to be set back the prescribed distance from the centre of the streets upon which they would abut.

Formation of Streets.

Woolwich.—That an order be sealed and issued to Mr. J. O. Cook, sanctioning the formation or laying out of a street 40 ft. wide for carriage traffic, to lead out of the south side of Plumstead Common-road into Admaston-road, Plumstead, on his application to the Council on behalf of Mr. W. G. Dawson and Mr. J. Harper. That the name Ennis-road be approved for the new street.

Lewisham.—That an order be sealed and issued to Mr. A. S. Green, sanctioning the formation or laying out of streets 40 ft. wide for carriage traffic upon the Perry-vale Park Estate, Stanstead-road, Forest Hill, on his application to the Council, on behalf of Mr. E. Roche. That the names Vestris-road, Kemble-road (in continuation), and Trilby-road be approved for the new streets.

Hampstead.—That an order be sealed and issued to Messrs. Tuckett & Son, refusing to sanction the formation or laying out for carriage traffic of a street 40 ft. wide, to lead from Platt's-lane into West Hampstead-avenue, on the further application on behalf of the West Heath Land Company, Limited, as the steepness of the gradients of portions of the street is still objectionable.

Line of Fronts and Space at Rear.

Kensington, North.—That the consent of the Council be not given to the erection of a shop and coffee tavern, with living rooms over on the east side of Ladbroke Grove-road, at the corner of Kensal-road, with an irregular open space at the rear, on an application of Mr. G. Humphreys-Davies on behalf of the Gas Light and Coke Company.

Cubical Extent.

Hoxton.—That the consent of the Council be not given to the erection of an addition to a building on the west side of Paul-street, Finsbury, at the corner of Paradise-street (block A), and of a building at the rear on the south side of Paradise-street, between Castle-place and Platina-street (block B), such addition and building each to exceed in extent 250,000 cubic feet, on the application of Mr. A. V. Wilmott on behalf of Messrs. McNamara & Company, Limited, as the cubical extent of one of the proposed blocks would be about 475,000 ft., and the Council is expressly precluded by Section 76 of the London Building Act, 1894, from consenting to the erection of buildings of this description exceeding 450,000 cubic feet.

Height of Buildings.

City.—That the consent of the Council be given to the erection of a building on the west side of Carmelite-street, Victoria Embankment, at the corner of Tallis-street, to exceed in height the width of each of the two streets, on application of Mr. Edwin T. Hall, on behalf of the National Press Agency.

OBITUARY.

MR. JOHN CLUTTON.—Mr. John Clutton, the well-known surveyor, died on Sunday last, at Reigate, in his eighty-sixth year. The deceased, who was the first President of the Surveyors' Institution, was, in 1848, appointed by the Office of Woods and Forests to survey all the royal forests and woodlands excepting Windsor. In 1850 he became agent for the estates of the Crown in Surrey, and afterwards for those in a number of other counties. He made extensive purchases of property under the Defence Acts of 1842 and 1860, and it was he who arranged for the acquisition of the estates now forming the site of the Aldershot camp. So far as regards the southern half of England and Wales, Mr. John Clutton, with his brother, the late Mr. Henry Clutton, acted as Surveyor for the Ecclesiastical Commissioners for England during just half a century.—*Daily Chronicle.*

MR. W. H. COWLIN.—The death has just taken place of Mr. W. H. Cowlin, one of the Councillors of St. Paul's Ward, Bristol, and the senior member of the well-known firm of builders in Stratton-street and Meadow-street. Mr. Cowlin was a member of the committee of the Bristol Master Builders' Association. He was married only eighteen months ago.

GENERAL BUILDING NEWS.

SCHOOLS, HUDDERSFIELD.—The managers of the Rashcliffe (Church of England) Day Schools, Huddersfield, have decided to build a new school in St. Stephen's-road at a cost of 1,800*l.*, and have given instructions to Mr. J. Berry, architect, of Huddersfield, to prepare the plans, &c.

ALTERATIONS AT THE BIRKENHEAD WORKHOUSE.—At the last meeting of the Birkenhead Guardians a series of plans prepared by Mr. E. Kirby, architect, of Liverpool, for extensions of the workhouse premises were considered, comprising changes in the school buildings and nurses' home and infirmary. It was decided that the plans should be forwarded to the Local Government Board, and recommended for approval and adoption.

SCHOOL, LINCOLN.—A new boys' school, which has been erected to accommodate 250 boys, was opened at Lincoln on the 29th ult. The total cost of the school, including the site, is between 2,000*l.* and 2,400. It consists of one class-room on the ground floor, measuring 29 ft. 6 in. by 21 ft. 6 in.; a second class-room, a master's-room, and a cloak-room. On the upper floor there is a large school-room, 50 ft. long by 21 ft. 6 in. wide, also a class-room. The architects were Messrs. Goddard & Sons, and the builders Messrs. H. S. & W. Close.

BOARD SCHOOLS, CHARLTON, LONDON. — The new Board Schools in Fossdene-road, Charlton, were opened recently by the Marquess of Londonderry, K.G., the Chairman of the London School Board. The schools have been erected by Messrs. Kirk & Randall, from the designs of Mr. T. J. Bailey, Architect to the Board. The building is in three floors of six rooms each, and will accommodate 1,180 scholars. It is of brick and cement, and the fittings are of polished pine. In addition to the usual accommodation, there are laundry and cookery centres, and a special art room.

DISTRICT COUNCIL OFFICES, QUEENSBURY, YORKSHIRE.—The building erected by the District Council, in Albert-road, Queensbury, was opened recently. The building contains on the ground-floor offices for the clerk, surveyor, and collector, and over these is a council-room. A separate building contains stable accommodation for four horses, a store-room, and a house for the ambulance carriage. Mr. Drake was the architect.

LABOURERS' DWELLINGS, LIVERPOOL.—Reports of the Liverpool City Engineer and Deputy Surveyor on the scheme for building labourers' dwellings in Ford-street, Gildart's-gardens, and Arley-street, off Vauxhall-road, have been published. The Engineer (Mr. Boulnois) proposes to build several blocks of tenements on about 3,000 square yards of land lying between Ford-street and Gildart's-gardens. For this purpose he has designed houses of three types. Of the first type there are sixty-three tenements. Each tenement consists of two rooms, and there are three tenements in each house. The ground-story tenements are entered directly from the street, and the upper tenements from a common balcony running along the rear of the houses at the level of the first floor. There is an open yard on the ground level, to be used only by the occupants of the ground-story dwelling, and a small yard at the level of the first floor, to be used in common by the occupants of the first and second-floor stories. The frontage of each house is 15 ft., and the depth 21 ft. There are only two houses of the second type. They are three stories in height, the ground story flat containing a tenement of four rooms, and each of the two upper stories two rooms. The ground-floor dwelling is entered directly from the street, and the two upper flats by a common stair entering by the same doorway as the ground-floor dwelling. The frontage of each house is 23 ft. 6 in., and the depth 24 ft. There is behind each house an open yard on the ground level, to be used only by the occupants of the lower dwelling. There is also a small yard on the first-floor level, to be used in common by the occupants of the four tenements on the upper floors. The houses of the third type are arranged in blocks of three stories in height, the ground-story flat containing a tenement of three rooms, whilst each of the two upper stories contains a tenement of two rooms. The lower tenements are entered directly from the street, and the upper by a common stair leading from the street to the upper floors. The frontage of each house is 20 ft., and the depth 18 ft. Mr. Turton's scheme is for a somewhat better class of house, which it is proposed to build on the north side of Arley-street. He makes provision in buildings of two stories in height for a ground-floor dwelling containing a living-room a bedroom and a scullery The upper floor dwelling is planned to include a living-room 14 ft. by 10 ft. (average), one bedroom 14 ft. by 8 ft. another bedroom 14 ft. by 5 ft. 3 in., and a scullery 7 ft. 3 in. by 7 ft. Eighteen houses, containing thirty-six tenements, of this class are provided for in the scheme. Two blocks, each containing six houses, but slightly larger, are also proposed to be built.

SUBWAY STATION, GLASGOW.—The new subway station at St. Enoch-square, Glasgow, is to be a two-story building standing in the centre of the square, and immediately in line with Buchanan-street. It is oblong in plan. On the ground floor is to be situated the booking office with turnstiles, and from thence two staircases will lead to the underground platform, while a central staircase leads up to the suite of offices on the floor above. The building will be built of hewn red stone from Locherbriggs Quarry in Ayrshire, and the roof is to be tiled with red tiles. The domes of the octagonal turrets will be covered with copper, and the terminals over there and also over the windows will be of wrought iron with copper vanes, overlaid with gold. The architect of the new station is Mr. James Miller, Glasgow.

METHODIST CHAPEL, GATESHEAD.—On Saturday last week the new chapel, erected for the New Connexion body of Methodists in Whitehall-road, Gateshead, was opened. The new Bethesda Chapel has been built at the corner of Coatsworth-road and Whitehall-road, Gateshead. The style of the building is Gothic, and the structure is principally of brick with terra-cotta and stone dressings. The main features are the large tracery window in the front gable, and the tower and spire at the corner of the two roads. The accommodation is for 550 sittings. In addition to the church there is a large vestry, also minister's and choir vestries, and a church parlour, 33 ft. by 18 ft. The roof is open-timbered, with hammer-beam principals; the benches are open. All the walls are wainscotted, and the timber used throughout is of pitch-pine, varnished. The heating is by hot-water on the low-pressure system, with radiators placed in the corridors and passages, &c. The ventilation is effected by Tobin's fresh-air inlets in the walls, and outlets connected with air-shafts in the ceilings. The contractor for the building was Mr. A. Bringle, of Gateshead; the pulpit and communion-rail by Mr. T. Stockdale, of Gateshead; and the heating by Mr. F. W. Spencer, of Oldham. The plans, chosen in a limited competition, were prepared by Mr. J. W. Firth, architect, of Oldham, and under his superintendence the work has been carried out; Mr. G. Stockdale, of Gateshead, acting as clerk of works.

INFIRMARY EXTENSIONS, ARBROATH. — The Paving and Improvement Committee of the Arbroath Police Commission have approved of the plans of the proposed extension of the Infirmary. The main object of the extension is to provide an operating-room. The plans have been prepared by Messrs. Carver & Symon, architects, and the contractors for the various works are as follows, viz.:—Mason work, Alexander Reid; joiner work, Alexander Scott; slater work, William Brand; plumber work, D. Cook & Sons; and plaster work, Middleton & Donald—all of Arbroath.

SCHOOLS, NOTTINGHAM.—On the 28th ult. new schools, on Woodborough-road, in connexion with the St. Augustine's Catholic Mission, were opened by the Sheriff of Nottingham. The schools consist of two brick buildings, one to be used as a mixed school and the other as an infant school. The dimensions of the mixed school are 70 ft. by 21½ ft., those of the infants' school being 40 ft. by 24 ft. The mixed school is certified to accommodate 230 children, and 120 is the limit of the smaller building. The cost of the schools has been 1,100*l.* The architect was Mr. James Hart (Corby, Grantham), the builder was Mr. A. B. Clarke, Nottingham. Adjoining the mixed school is a class-room, and two cloak-rooms are provided.

PROPOSED CHURCH, DRYFESDALE, DUMFRIES.—It is proposed to build a new church at Dryfesdale. Mr. Carruthers, architect, of Dumfries, has prepared plans, which show that in the new church there will be 870 sittings. The estimates amount to about 4,200*l.*

COUNCIL OFFICES, HUNSTANTON.—The foundation stone of the new Council offices at Hunstanton has just been laid. The building is being erected from the designs of Messrs. George J. & F. W. Skipper, architects, of Norwich, whose plans were chosen in a limited competition. The style is Elizabethan, adapted as necessary to meet modern requirements. The main entrance is by a flight of stone steps through an arched doorway into a vestibule, on either side of which will be ladies and gentlemen's cloak-rooms, and ticket office. Thence are two entrances into the large hall, which will be 77 ft. long, and 37 ft. 6 in. wide, and will have an open timbered roof of massive principals; there will be a gallery at one end, and a broad and deep platform or stage at the other end, provided with retiring rooms. The windows will be mullioned and transomed, and the walls will have a dado of matchboarding to window height. Crush doors will be provided, and a separate entrance for front seats. The Council offices will be approached by a side entrance in an octagonal annexe, and here on the first floor the Council chamber will be situated. Adjoining it will be the clerk's office, and on the ground floor beneath will be the surveyor's office, &c. The heating will be by hot water pipes on the low pressure principle. The contractor is Mr. Golden Hipwell, of Wisbech. Mr. Walker, the surveyor to the Council, acts as clerk of the works.

HALL AND SCHOOLS, LOUGHBOROUGH. — A lecture-hall and schools are about to be built in connexion with the Baxter-gate Baptist Chapel, Loughborough. Plans were prepared by Mr. Geo. H. Barrowcliff, and the estimated cost of the undertaking is about 1,600*l.* The principal contract was placed with Messrs. A. & S. Main.

FLATS, DUBLIN. — A new building is being erected by Mr. J. P. Pile in Earlsfort-terrace, Dublin, which is to be let out in flats, each capable of accommodating a family. Each flat contains a drawing-room and a dining-room in front, and divided by a hall from these apartments are four bedrooms, a kitchen, with scullery, pantry, &c. Up through the whole extent of the building, about five stories from the basement, a lift is worked by

hydraulic power. Beside this there is a staircase, and in the rear are two small hand-lifts, to be used in raising provisions, &c., from the basement to the upper stories. The main entrance to the flats is by an oak door opening on Earlsfort-terrace. Inside this are swinging doors. Each flat is entered by a hall-door. All the apartments are fireproof. The buildings have an elevation of about 70 ft. in height. or 100 ft. to the chimney tops, 74 ft. frontage, and a depth of 78 ft. They are constructed throughout of concrete, and in the front the finish is of red stone, while the back is done down in compo. Mr. Hudman is the architect, and the work is being carried out under the direction of Mr. Fitzpatrick.

PARISH CHURCH, LAURENCEKIRK, KINCARDINE.—The Parish Church of Laurencekirk has just been opened. The present building replaces one erected in the year 1804. The improvements consist practically of reconstruction and extension. While part of the old walls have been left standing, the west gable has been carried forward 17 ft., and includes a bell tower in Early English style. A doorway has been erected on the south side. An open roof of varnished woodwork takes the place of the old plaster ceiling, while the aisle on the north side has been extended along the whole length of the church. The pulpit, which has been changed to the east end, is of stained oak, with carved scroll and panels, and was designed and erected by Mr. A. Dunbar, Laurencekirk, the contractor for the woodwork of the church. Galleries extend across the north end of the church and along the aisle. All the woodwork is of American pine. The church is heated by the Grundy patent system of heating and ventilation, and is illuminated by incandescent burners in pendants and brackets of wrought-iron and brass. The architect is Mr. A. Marshall Mackenzie, A.R.S.A., Aberdeen, and the following are the contractors:—Mason work, Messrs. Ford & Sons, Montrose; slater work, Mr. J. Scott, Brechin; plaster work, Messrs. Burness & Sons, Montrose; plumber work, Mr. W. Rae, Laurencekirk; painter and glazier work, Mr. J. Bruce, Laurencekirk; iron work, Messrs. Bisset & Co., Aberdeen.

WESLEYAN CHAPEL, STRENSALL, YORKSHIRE.—A new Wesleyan Chapel has just been opened at Strensall. The new building is built of brick with stone finishings, and the interior is divided by a moveable partition into two parts, one of which can be used as a schoolroom. The larger room (the chapel proper) is about 50 ft. long by 22 ft. in breadth, and the schoolroom is of the same width, and is 20 ft. in length. The seating accommodation of the chapel is 120, and of the schoolroom about eighty persons. Mr. Edward Taylor was the architect, Mr. Henry Creaser the builder.

CARDYNHAM CHURCH, NEAR BODMIN.—The tower of this church being in a very precarious condition, Mr. Edmund Sedding, architect, Plymouth, was asked to inspect it. He has reported that the upper 20 ft. must be taken down and carefully rebuilt without delay.

SANITARY AND ENGINEERING NEWS.

THE SNOWDON RAILWAY.—On the 27th ult. Mr. Rigby, the manager for Messrs. Holmes & King, the contractors for the Snowdon Railway, entertained the local Pressmen and a large number of local gentlemen to a trip on the railway from the Victoria at Llanberis to the summit of Snowdon and back. From the starting-point at Llanberis there are four stations, the first being Victoria Station, and the second close by a picturesque waterfall. The next station is Hebron, so named after a small chapel close by, and, finally, there is the terminal station at the summit. There are already three sidings to allow ascending and descending trains to pass. *En route* there are two viaducts, one 500 ft. long, and consisting of fourteen arches, the other 140 ft. long, with four arches. In addition, there is a bridge with a span of 50 ft., near Ca Esgob, just above the waterfall. Probably the most romantic portion of the line is that overlooking the Pass of Llanberis, at which point the railway track is about 180 ft. above the level of the old road to Snowdon summit. The engine, which pushes the train up and precedes it in descent, is of 160 horse-power, and the train is supplied with four powerful and independent breaks. All the latest Swiss improvements have been introduced. Mr. Oswald is the Company's engineer. Mr. Owen Morris, Carnarvon, is the sub-contractor for the works.—*Liverpool Post.*

WATER SUPPLY, DUNLOP, AYRSHIRE.—A gravitation water scheme for the village of Dunlop was recently inaugurated. Mr. Stuart, of Messrs. Warren & Stuart, C.E., Glasgow, was engineer of the water scheme, and the contract was executed by Mr. Richmond, Galston.

WATER SUPPLY WORKS, KILMUN, ARGYLL.—Kilmun waterworks have now been completed. The water, which is from a spring in Glen Masson, is carried a distance of six miles to three filters on the hill above Kilmun Free Church. The sides of the filters are lined with white enamelled tiles. The water, after passing through the three filters, flows into a large supply tank, from whence it is conveyed by an 8-in. pipe, which is reduced in diameter to 4 in. at Blairmore. Mr. James Wilson, C.E., Edinburgh, is engineer of the works.

FOREIGN.

FRANCE.—The "Société Centrale" of French architects has passed a vote, with only one dissentient voice, in favour of the 1900 Exhibition project as presented by the Government, and which has been the object of the last year's competition; that is to say the design with the new bridge over the Seine on the axis of the Invalides, and the avenue uniting that and the Champs Elysées.——M. Carpeaux, son of the eminent sculptor, has been appointed Assistant Curator of the Sculpture Museum at the Trocadéro.——M. Poirson, painter, lately deceased, has left a legacy of 100,000 francs to the City of Paris to assist young artists in pursuing their studies, and 80,000 fr. to the Louvre for the purchase of pictures.——M. Tony Noël, the sculptor, has been commissioned to execute the monument to Pasteur at Alais. His design represents Pasteur standing, holding in his left hand a branch with silkworms on it; with his right hand he appears to be assisting an infant who symbolises the silk industry, and implores his aid.* The group is to be executed in bronze on a marble pedestal.——M. Lucien Magne is the architect who has been commissioned by the French Government to direct the works of repair and strengthening of the Parthenon.——M. C. Enlart, a former member of the French School at Rome, has received a mission to proceed to Cyprus to study the mediæval monuments there. M. Enlart is the author of a remarkable work on the French origin of Italian Gothic.——The jury in the competition for a Conservatoire of Music and a Fine Arts School at Lille has selected the designs of M. Cordonnier for execution, with premiums to several other competing architects. The competition was limited to architects born or living at Lille.——A committee has been formed to raise a monument to Chopin, at Pas.—— The committee for the organisation of the proposed classic dramas in the Roman theatre at Orange has asked M. Formigé to prepare a scheme for the erection of a velarium, according to the ancient custom, so as to have the performances by daylight, without being incommoded by the heat, and to avoid the incongruous effect of introducing electric light in an ancient building.——The "Société Centrale" has lost one of its most devoted non-resident members, M. J. L. August Lorrain, an architect at Dieppe. He was seventy years of age, and had been a pupil of Constant Dufeux, and of the Ecole des Beaux-Arts. He was architect-in-chief to the Rhône and Simplon line of railway, and subsequently to the city of Dieppe. He had also carried out numerous châteaux, villas, &c.

GERMANY.—A special medal is to be struck for the authors of premiated works exhibited at the International Art Exhibition. The design for this has been the subject of a competition, in which 150 candidates participated. It is characteristic that the Emperor, on seeing the selected design, personally altered his portrait, which is to be stamped in bas-relief on one side of the medal, changing the uniform in which he figures, and also inserted his own name, and the date on the medal, instead of the title of the exhibition for which it is being struck.

* This, we presume, represents a local view of Pasteur's services to mankind.

MISCELLANEOUS.

GLASGOW BUILDING TRADES' EXCHANGE.—The fourth of the series of monthly meetings in connexion with the Glasgow Building Trades' Exchange was held in the Exchange Rooms, 30, Gordon-street, on the 20th ult., when Colonel Bennett read a paper on "Quantity, Quality, and Price." In opening, Colonel Bennett said that the keenness of competition at the present time had reached such a point that masters were beginning to find it impossible to maintain their position in business and give good quality and sufficient quantity at the prices they were forced to accept. The tendency of the age, he said, was towards concentration, taking things in bulk; division of labour and divided responsibility were discouraged. Instead of each contractor estimating for his own particular branch of a contract as formerly, he was now asked to estimate for the whole work. In this state of matters the capitalist naturally took most of the large contracts, and the system gave rise to evil. The sub-contractors' names were never disclosed in fixing the contract, and the large contractor, after making use of these minor contractors' estimates to assist him in getting the work, very frequently passed them over, and gave the execution of the work to some one who after the settling of the contract offered to do a particular branch fractionally cheaper. Colonel Bennett commented on the vast quantity of labour expended by architects in competitions where only one could succeed, and gave an instance where the cost expended by competitors in competitive plans amounted to about three-fourths of the cost of the whole building. He also touched on the vast amount of profitless labour continually expended by contractors in filling up the schedules flung broadcast among them. Passing to quality, he instanced the great names in art, literature, mechanics, and building as examples of those who had taught the world what genuine quality was. The cry in the building world, he said, now was that quality had gone out of the world, and there was nothing but jerry building left. For the fact that this to a certain extent was so he blamed a public who wanted something for nothing, and everything for very little, and the builders, who encouraged them in the notion that they got this. In dealing with price, he gave examples of the enormous discrepancies between various estimates for the same work, some showing a difference of 20 to 60 per cent. He blamed architects for accepting estimates which their experience ought to teach them it was impossible to execute the work for; but if they did accept these they ought to see that the offerers were bound down to their offer and made to execute their undertaking. He advocated that there should be inspectors appointed, only after strict examination, to pass work done under Corporation contracts. In conclusion, Colonel Bennett maintained that in the Building Exchange lay the power, if not to bring about the millennium in the building trade, at least to advance matters considerably in that direction. With its facilities for master meeting master in friendly converse and discussion they would come to a better knowledge of each other as men, and to a fuller understanding of each other as brother tradesmen. By this means he hoped the clouds of jealousy and distrust too often born of want of knowledge of each other would be cleared away, and an opener and more honourable spirit of rivalry engendered. That its members would stand together in asking a fair price for honest work honestly carried out, and thus help to put the whole contract system on a firmer and more satisfactory basis.

AGAINST HIGH BUILDINGS.—The New York correspondent of *The Lancet* writes:—"The enormous height of the more recent buildings in New York (twenty-five stories) is beginning to excite public alarm. The Chamber of Commerce has issued a vigorous protest against them. A committee to whom was referred the question if in their judgment the construction of buildings in this city without limit as to height and without reference to width of the streets is consistent with the public health and welfare, report that after consultation with many of the best known experts the committee have come to the conclusion that, in their judgment, such construction of buildings without limit as to height and without regard as to width of streets is not consistent with public health, and that the interests of a majority of our citizens require that the height should be limited. It appears evident that the health of the occupants of their own lower floors as well as of the lower floors in neighbouring houses must suffer for want of proper ventilation and sunlight. These evils would become aggravated, the eyesight of tenants would suffer by the compulsory use of artificial light, and their health by dampness and other unhealthy conditions if the number of tall buildings should materially increase. The safety of buildings adapted for offices may become impaired by weight of merchandise or vibration of machinery when the owners cease to find them profitable for offices and allow them to be used for mercantile or manufacturing purposes contrary to law. The Taylor building on Park-place, once considered fireproof, collapsed about four years ago, burying sixty workmen in its ruins, in consequence of the weight of some machinery which had been placed in it. It is said of some large buildings in New York which for some years have been popular for offices on account of superior light and ventilation, that owners intend to adapt them for other purposes since the light has been diminished by taller buildings opposite."

THE TOWER BRIDGE AND THE SUBWAY.—The umpire has published his award in the recent arbitration case, in which the Tower Subway Company claimed from the Corporation of the City of London 30,000*l.* as compensation for loss of revenue sustained by the company owing to the opening of the Tower Bridge. The case was heard at the Surveyors' Institute, and Mr. A. R. Stenning, who acted as umpire, has now awarded the company the sum of 11,500*l.* The claim arose under Section 35 of the Corporation of London (Tower Bridge) Act, 1885, which gave power to the Tower Subway Company to make such a claim as that which has now been adjudicated upon within five years from the opening of the bridge, in the event of their tolls being injuriously affected by such opening. Mr. Robert Vigers acted as arbitrator on behalf of the claimants, and Mr. R. C. Driver on behalf of the Corporation; but neither of these gentlemen was called as a witness, nor did they sit with the umpire.

CRANE AND ENGINE WORKS.—The business of Messrs. Jessop & Son of Leicester and that of Messrs. Appleby Bros. of London has been amalgamated, and will be carried on both in Leicester and London under the firm of "Jessop & Appleby Bros."

MACHINE FOR SCREENING GRAVEL.—"Cooper's" machine for this purpose, of which a description and illustration have been sent to us, is a tapered revolving chamber; the material to be treated is fed into a hopper at the small end, and during its course by gravitation and rotation to the

larger end, receives a first washing by water that is always retained in the barrel; on its arrival at the latter it is elevated by buckets attached to the shell, and discharged into the screens, but before this takes place the water supply is directed from a nozzle into the buckets, giving the gravel, &c., a second washing or final rinsing. The soiled water is constantly flowing out at the small end of the chamber. It is claimed that the screening and dividing of the material is perfectly carried out, being first deposited on to the coarsest screen, and lastly on the finest one; this method allows all the screens to be acting or working simultaneously. The screens can be arranged to suit special requirements as regards number and size of mesh.

STRIKE OF JOINERS AT BLACKPOOL.—The master joiners of Blackpool having on the 29th ult. declined to grant the full concessions demanded by the members of the union, the men have refused to resume work. The masters offered them 8½d. per hour in winter, and 8¾d. per hour in summer, but the men demanded 8¾d. all the year round, and this the masters would not grant.

GLASGOW ARCHÆOLOGICAL SOCIETY.—A meeting of the members of the Archæological Society of Glasgow was held in the rooms in Bath-street on the 20th ult. Mr. David Murray, LL.D., President of the Society, occupied the chair. The President read a paper on a brass cup found in the churchyard of Rodel, in the Island of Harris. He said that the vessel had been got in the graveyard of the old ruined church of St. Clement. It was of brass or bell metal, and consisted, like the proper chalice, of three distinct parts or members—(1) the cup or bowl (2) the stem or shaft, and (3) the foot. The foot was circular, the stem was round, and in its middle there was a projecting ring resembling a knob or knot. The weight of the vessel was 7 oz., and it was a trifle over 1½ in. in depth. It was bell-mouthed. Afterwards Mr. Ronald M. Burrows, M.A., Oxon., gave an account of a journey in Greece in the autumn of 1895.

OLD CORN MARKET, GHENT.—It is reported that the old Corn Market at Ghent, an interesting relic of mediæval architecture, and said to be the oldest civic building in Belgium, has just been destroyed by fire. Erected in the latter end of the eleventh century, it was long used as a depository for the fourth part of all the grain cargoes entering Ghent by the Scheldt, a toll instituted by the early Flemings as a provision against famine; and in later times it served as a storehouse during years of abundant harvest.

STATUE OF JOHN BRIGHT.—In the House of Commons on the 2nd inst., Mr. Labouchere asked the First Commissioner of Works whether his attention had been called to a statute, purporting to be of the late Mr. John Bright, in the central lobby; and whether it was to remain there. Mr. Akers-Douglas replied that the statue of Mr. Bright had been placed there at the request of the committee of the late statesman's friends, at whose expense and under whose supervision the memorial had been raised to his memory. Under the circumstances he did not think that its removal was a question for him to consider. He had certainly heard varying opinions as to the artistic merits of the statue in question, but while he was ready to consider the views of the Hon. Members he was bound to say he was aware of no unanimous opinion as would justify his serious consideration of a proposal for its removal.

GATESHEAD CORPORATION AND ELECTRIC LIGHTING.—A firm of electrical engineers having applied to the Gateshead Corporation for liberty to supply the Borough with the electric light, the subject came up for discussion at a recent meeting of the Parliamentary Committee. The feeling was expressed that it was undesirable to allow the growth of such a monopoly in the Borough, and that if electric lighting could be supplied at a remunerative rate to the public, the Local Authority should lay down the necessary plant, and the benefits resulting from its adoption could be applied to the relief of the rates. Ultimately a motion was passed instructing the town clerk to ascertain if any other Corporate Authority had commenced supplying their districts with the electric light, and with what success.

PROPOSED STATUE OF THE LATE PROFESSOR HUXLEY.—Mr. Onslow Ford has been invited to prepare models of his designs for a statue of Thomas Huxley, and it is not improbable that the statue may be erected in an open place instead of in a public institution.

ANNUAL DINNER OF ABERDEEN MASTER MASONS.—The annual dinner of the Aberdeen Master Masons took place in the Royal Athenæum, Aberdeen, on 28th ult. Mr. John Fyfe, quarry-owner, Kemnay, presided. The Chairman, in giving the "Master Masons' Association," said, when the association began about thirty-five years ago there were only nine or ten building firms in the city. Now Aberdeen, which had a population double that of fifty years since, had some fifty building firms, and in the polishing trade seventy. He also said their architects and builders had the credit of making Aberdeen the beautiful city it was. Mr. John Ross, the treasurer, replied. Mr. John Rust, in replying for "The Architects," suggested that the architects in the city should form themselves into an association to promote the interests of the profession, and said he saw no reason why there should not be not only ornamentation and decoration, but statuary in granite in front of their buildings. Mr. Pringle proposed "The Chairman," and "The Quarriers" was given by Councillor Duguid, and acknowledged by Messrs. W. B. Wight (of Messrs A. & F. Manuele) and John Donald (Rubislaw Quarry). Other toasts followed.

THE ELECTRIC LIGHTING OF EDINBURGH.—At a recent meeting of the Royal Scottish Society of Arts in Edinburgh, Mr. Monkhouse, the Corporation's electrical engineer, gave a lecture on the distribution of electric energy in Edinburgh. He said there were two systems of distribution in Edinburgh—one the low-pressure or tension continuous current three-wire system, with feeders and batteries, the pressure between the two outer mains at the feeding point being 230 volts, and between either outer main and a neutral one 115 volts, the current being sent out from the station with such an excess of pressure only as was required to overcome the resistance of the mains between the station and the feeding point. The other system was the high tension alternating, the current being generated at 2,200 volts and sent out along the mains at that pressure and transformed down by a transformer to a pressure of 115 volts before entering the consumer's premises. It was satisfactory to know that the output from the station had gone on increasing since the beginning. In reply to questions, the lecturer said what had contributed mainly to the cheapness of electricity in Edinburgh were the number of arc lamps and cheap coal. They had also all the latest improvements at the station for saving steam and water, and great economy was effected by the use of superheaters.

LEGAL.

LIFTS IN PUBLIC BUILDINGS.

AT the North London Police-court, on the 27th ult., Messrs. Joseph Richmond & Co., Limited, of Kirby-street, Hatton-garden, were summoned before Mr. Bros, for failing to serve notice on Mr. Frederick Meeson, the District Surveyor of Hackney, before erecting a hydraulic lift at the new women's block at the Hackney Workhouse.

Mr. Judson, solicitor, appeared for the surveyor, and Mr. Hudson, barrister, was for the defendants.

The facts were not disputed. The defendants had erected the lift, and in doing so had cut into the external walls for the purpose of fixing a couple of girders, and drilled a half-inch hole in the stone staircase for the purpose of holding a bolt.

In cross-examination, Mr. Meeson said that the Act of 1894 laid it down that any work which affected the external walls necessitated notice to the District Surveyor.

Mr. Judson said that Mr. Meeson was entitled to 2*l.* 12s. 6d. fees on the work, and if no notice was given he was deprived of those fees.

Mr. Joseph Richmond said that his firm had erected some hundreds of similar lifts in all parts of London, and in almost every public building in the metropolis. Never on any occasion had the District Surveyors insisted on notice, nor had any been given. On one or two occasions when deep pits had been sunk near foundations in Cheapside the District Surveyor had been warned, but he had not deemed it within his province.

Cross-examined: The witness was aware that there was a difference in the Act between public and private buildings.

Mr. Bros, in giving his decision, said he was of opinion that there was in the Act of 1894 a much more stringent provision than in the old Building Act, and in view of that provision which laid it down that in any public building notice must be given when any external or party-wall or staircase was affected, he came to the conclusion that he must find in favour of the District Surveyor. However, as this was a new question he should only impose a small penalty of 20s., with 2s. costs.

Mr. Judson asked for professional costs.

Mr. Bros: No. It is entirely a new question, and I may not be right with regard to my decision.

Mr. Hudson asked for a case for the opinion of the superior Court.

Mr. Bros: I will state a case if you wish it.

DAMAGES FOR PERSONAL INJURIES.

IN the City of London Court, before Mr. Commissioner Kerr, on the 26th ult., an action was brought, under the Employers' Liability Act, by Henry Cude, carpenter, to recover the sum of 250*l.* against his former employers, Messrs. Lidstone & Sons, builders, Hosier-lane, Smithfield, E.C., for personal injuries sustained.

Cude had been in the defendants' service for about three weeks, and on November 16 he was sent to assist in the erection of a large house at No. 88, Clerkenwell-road. On the second floor he was doing some carpentering work, and he stepped on to what he thought was a portion of one of the joists. Instead of that it turned out to be a mortar-board turned upside down covering a large hole. As soon as Cude stepped on the board he fell through the hole on to the first-floor joists, and through those to the floor below, in all a distance of 21 ft. He broke three ribs on his right side and two on the left side, and fractured his breast bone. His doctor said he would be unable to work for twelve months. The defendant's case was that Cude should not have stepped on to the mortar-board. Mr. Commissioner Kerr said he must find for the plaintiff, and he would award him 150*l.* damages.

MEETINGS.

FRIDAY, MARCH 6.

Architectural Association. — Mr. Hervey Flint on "Masonry" (Practical Stonework). 7.30 p.m.

Institution of Civil Engineers.—Students' visit to the St. Pancras Refuse-Destructor Works. (Assemble at the Works, Georgiana-street, Great College-street, Camden Town.) 2.30 p.m.

Auctioneers' Institute.—Mr. A. J. Ram on "Valuations and Appraisements." 8 p.m.

SATURDAY, MARCH 7.

Architectural Association.—Visit to the Northampton Institute, St. John-street-road, Clerkenwell, E.C. 3 p.m.

Sanitary Inspectors' Association. — Annual Dinner, Holborn Restaurant. 6 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Inspection and Demonstration at Harrison & Barber's Knacker Yard, Whitechapel. 3 p.m.

MONDAY, MARCH 9.

Sanitary Institute (Lectures for Sanitary Officers).—Professor A. Bostock Hill on "Trade Nuisances." 8 p.m.

Clerks of Works' Association (Carpenters' Hall).—Paper by Mr. G. M. Berry. 7.30.

Leeds and Yorkshire Architectural Society.—Exhibition of the Institute of Architects Prize Drawings, and Nomination of Officers.

TUESDAY, MARCH 10.

Institution of Civil Engineers.—(1) Further Discussion on Mr. W. H. Wheeler's paper on "Littoral Drift in Relation to River-Outfalls and to Harbour-Entrances," and (2), time permitting, Papers to be read, with a view to discussion:—(*a*) "The Lixiviation of Silver Ores," by Mr. J. H. Clemes; (*b*) "Mining and Treatment of Copper Ore at Tharsis, Spain," by Mr. C. F. Courtney; (*c*) "Tin Smelting at Pulo Brani, Singapore," by Messrs. John McKillop and T. Flower-Ellis. 8 p.m.

Society of Arts (Applied Art Section).—Mr. Joseph Pennell on "English Book Illustrations, 1860-70." 8 p.m.

London School of Economics and Political Science (9, *John-street, Adelphi*).—Mr. E. J. Harper on "The Rating Question: Disturbing Influences." 6.45 p.m.

Imperial Institute (*East Hall*).—Dr. Max Ohnefalsch-Richter on "My Twelve Years' Stay in Cyprus." II. 5 p.m.

Carlisle Architectural, Engineering, and Surveying Society. — Mr. F. J. Nickols on "Municipal Electric Lighting."

WEDNESDAY, MARCH 11.

Architects' Benevolent Society. — Annual Meeting. 4 p.m.

Incorporated Association of Municipal and County Engineers.—Metropolitan District Meeting, to resume the discussion on Mr. J. P. Barber's paper on "Some suggested Amendments of the Metropolis Local Management Acts." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Inspection and Demonstration at Odam's Manure and Chemical Works, Victoria Docks, E. 3 p.m.

Society of Arts.—Professor A. C. Haddon on "Peasant Life and Industries in Ireland." 8 p.m.

Northern Architectural Association.—Annual Meeting. 7.30 p.m.

Edinburgh Architectural Association. — Professor Patrick Geddes on "Town and Gown: some conjoint possibilities of Architecture and Education in Edinburgh." 8 p.m.

THURSDAY, MARCH 12.

Society for the Encouragement of the Fine Arts.—Conversazione at the Galleries of the Royal Institute of Painters in Water Colours, Piccadilly.

Sanitary Institute (Lectures for Sanitary Officers).—Professor W. H. Corfield on "Water Supply, Drinking Water, Pollution of Water.' 8 p.m.

Society of Antiquaries.—8.30 p.m.

Institution of Electrical Engineers.—Discussion on Mr. G. L. Addenbrooke's paper on "High Voltage Lamps and their Influence on Central Station Practice." 8 p.m.

FRIDAY, MARCH 13.

Institution of Civil Engineers (Students' Meeting).—Mr. J. C. Cornock on "Tests of Centrifugal Pumps." 8 p.m.

SATURDAY, MARCH 14.

Sanitary Institute (Lectures for Sanitary Officers).—Inspection and Demonstration at the Aylesbury Dairy Company's premises, Bayswater. 3 p.m.

Edinburgh Architectural Association.—Visit to (1) Dundas Castle, (2) Kirkliston Church.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

4,283.—DOORS: *W. Steele.*—Means for securing doors of public halls, theatres, and the like, so that they may be opened readily if necessary. In folding-doors a bar is pivoted on a projecting stud from a plate secured to one door, and may be turned upwards to engage with two catches or clips on the other door. The bar is held in its position beneath the catches, when the doors are secured by a carrier or flap hinged above it, and having a short projection on which the bar rests. On raising the flap the bar is set at liberty and falls with its own weight.

5,534.—WINDOWS: *H. Norfolk.* — For enabling the sashes to be swung into the apartment, portions of the sash-grooves at each side of the window-frame are hinged to said frame, suitable means being provided for attaching the sashes to the hinged portions, so that they may turn together. The inner beads are made removable where necessary.

6,255.—DRAIN PIPES AND JOINTS: *J. Leeming.*—The pipes are so constructed that a channel or gutter is obtained at its lower inside surface, a firm base being secured by spreading out the pipe at this point by lugs or the like. For jointing these pipes a groove is made round the spigot end so as to leave a slight projection at the extreme end. The socket end is formed with its lower part extended beyond the upper portion so as to completely cover the channel or groove in the spigot end. At the upper part the

COMPETITIONS AND CONTRACTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Designs for Schools	Llanidloes Intermediate Schools	10*l.* 10*s.*	April 13
*Designs for Buildings, New North Bridge-street	Edinburgh Council	250*l.* 150*l.* and 100*l.*	June 15
*Slaughterhouse, &c.	Cleator Moor Co-operative Co.	10*l.* 10*s.*	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Various Materials	Newington Vestry	Clerk, Vestry Hall, Walworth, S.E.	Mar. 9
*Erection of Mortuary	Ilford U.D.C.	The Clerk, 3, Cranbrook-road, Ilford, E.	do.
*Paving with Granite Setts	Southend-on-Sea Corp.	Boro' Surveyor, Clarence-road, Southend	do.
*Kerbing, Tar Paving, &c.	Lewisham Bd. of Wks.	Surveyor's Dept. Board of Works Offices	Mar. 10
*Works and Materials	do.	Board of Works Offices, Catford, S.E.	do.
Block of Cottages, Belfast	Hampton House Indus. Sch. Com.	E. N. Banks, C.E. Chichester-street, Belfast	do.
Wesleyan Church, Schools, &c. Portland-road, Hove, Sussex	.....	John Wills, Archt. Victoria-chambers, Derby	do.
Alteration to 3, Commercial-buildings, Bridlington Quay	.....	J. Earnshaw, Archt. Wellington-road, Bridlington Quay	do.
Four Cottages, Loughall, co. Armagh	.....	Arthur Brooke, Estate Office, Loughall	do.
Court House, Police Station, &c. Maryport, Cumberland	.....	G. D. Oliver, County Archt. Carlisle	do.
Reservoir, &c. Chapelhill Farm, near Glencaple, N.B.	Dumfries Committee of C.C.	Leslie & Reid, C.E. 72a, George-st. Edinburgh	do.
Sewers, Brislington	Keynsham R.D.C.	H. M. Bennett, Engr. Liverpool-chamb. Corn-street, Bristol	do.
Additions to St. John's Church, Wimborne	.....	W. J. Fletcher, Archt. Wimborne	Mar. 11
*Cooking Apparatus	Holborn Union	The Master, Workhouse, Shepherdess Walk, E.C.	do.
*Additions, Kent County Lunatic Asylum	Kent County Asylums Committee	W. J. Jennings, 4, St. Margaret-st. Canterbury	do.
*Works and Stores	Chiswick U.D.C.	A. Ramsden, Vestry Hall	do.
Police Parade Room, &c. Stockport	Watch Committee	J. Atkinson, Boro' Surv. Petersgate, Stockport	Mar. 12
Warehouse, Fuller's Hill, Great Yarmouth	W. J. Benns	A. S. Hewitt, Archt. 10, Regent-st. Gt. Yarmouth	do
School	Kirkby Underwood (Linca) Sch. Bd.	H. Kirk, Archt. Sleaford	do.
Club and Business Premises, Skipton, Yorks	Skipton Liberal Buildings Co. Lim.	Jas. Ledingham, Archt. District Bank-chambers, Bradford	do.
Five Houses and Shop, Sunnybank-road, Mirfield, Yorks	.....	J. J. King Mitchell, Sunnybank-road	do.
Additions to Hospital, Leadgate, Durham	.....	J. W. Rounthwaite, Archt. 13, Mosley-st. Newcastle-on-Tyne	do.
Additions to Viaduct Hotel, Crumlin	.....	T. Roderick, Archt. Clifton-street, Aberdare	do.
Four Houses, Carbis Bay, Cornwall	.....	S. Trevail, Archt. Truro	do.
Additions to North Fort-street School	Leith (N.B.) Sch. Bd.	The Clerk, 2, Link's-place, Leith	do.
Laying Water Pipe, &c. North Fulham, Ugborough	Totnes R.D.C.	C. G. S. Acock, Surveyor, Bridgetown, Totnes	Mar. 13
Broken Granite, Flint, &c.	Bedfordshire C.C.	County Surveyor, Shire Hall, Bedford	Mar. 14
Hartshill Stone, near Abingdon	Culham R.D.C.	Bromley Challenor, 59, Stert-street, Abingdon	do.
House, Victoria Village, Abersychan, Wales	Pontypool Wesleyan Methodist Circuit	J. Rosser, Pontnewynydd, Abersychan	do.
*Street Improvements	Chard U.D.C.	B. J. Shier, Ilminster	do.
*Broken Granite	Bermondsey Vestry	F. Sumner, Town Hall, Bermondsey	Mar. 16
*Removal of Slop and Dust, Street Watering, &c.	St. Giles Bd. of Wks. Holborn, W.C.	G. Wallace, Offices, 197, High Holborn, W.C.	do.
*Wood and Asphalte Pavements	do.	do.	do.
*Works and Supply of Various Materials	do.	do.	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Road Repairs	Bradfield (Berks) R.D.C.	J. C. Pinniger, Clerk, Newbury	Mar. 16
Road Works, Church Bridge	Church (Lancs) U.D.C.	J. R. Reddish, Clerk	do.
Flint Road Metal	Steyning West (Sussex) R.D.C.	E. Cripps, Clerk, New Shoreham	do.
Market, Fire Station, &c.	Leek (Staffs) U.D.C.	J. T. Brealey, Archt. 1, Stockwell-street, Leek	do.
*Coal	Corp. of London	Comptroller's Office, Guildhall	do.
Cottage Hospital, Builth, Wales	.....	Telfer Smith, Architect, Builth	do.
Convent National Schools, Castleisland, Ireland	.....	J. J. F. Browne, Archt. Limerick	Mar. 17
Infirmary Buildings at Workhouse, Hyton-road	Sunderland Union	W. & T. R. Milburn, Archts. 36, West Sunniside	do.
Warehouse, Sheffield	Sheffield & South Yorks Navigation Co.	A. Ross, C.E. London-road Station, Manchester	Mar. 18
Wesleyan Chapel and Schools, West End, Morecambe	.....	S. Wright, Archt. Morecambe	do.
Sewers, Clough-lane, &c.	King's Lynn Corp.	E. J. Silcock, C.E. King's Lynn	do.
Surveyor's Materials	Littleborough (Lancs) U.D.C.	G. H. Wild, Surveyor	do.
Granite Setts, &c.	St. Helen's (Lancs) Corp.	G. J. C. Brown, Boro' Eng. Milnes & France, Archt. 99, Swan-arcade, Bradford	do.
Extension of Electric Light Station, Leeds	.....	R. Read, City Surveyor, Guildhall, Gloucester	Mar. 19
Engine House, Boiler House, &c. Waterworks	Gloucester Corporation	Horsfall & Williams, Archts. 15, George-street, Halifax	do.
Mill and Offices, Watson-lane, Sowerby Bridge, Yorks.	.....	A. M. Fowler, C.E. 1, St. Peter's-sq. Manchester	Mar. 20
Sewers and Outfall Works	Helmsley (Yorks) R.D.C	J. Mansergh, 5, Victoria-street, S.W.	do.
*15,000 tons Portland Cement	Birmingham Corp.	H. A. Cutler, Municipal Offices, Rawtenstall	do.
*Brick and Pipe Sewers	Rawtenstall and Bacup Joint Sewer Com.	Council Offices, 3, Cranbrook-road, Ilford, E.	Mar. 21
*Hospital	Ilford U.D.C.	Nicholson & Corlette, 28, Theobald's-road, W.C.	Mar. 23
*Erection of School, Alterations to School Furniture	South Benfleet Sch. B.	M. Paterson, C.E. 25, Manor-row, Bradford	do.
*Construction of Main Drainage	Elland U.D.C.	H. T. Smith, Bank Chambers, Holywell	do.
*Technical Dual School	Holywell District School Governors	Borough Engineer	do.
*Erection of Stables	Southampton Corp.	Architect's Department, Spring-gardens, S.W.	Mar. 24
*Weights and Measures Testing Office	London C.C.	do.	do.
*Gas Meter Testing Office	do.	P. H. Palmer, C.E. Town Hall	do.
Fire Engine Station, &c. Priory-road, Halton	Hastings Corporation	Council Offices	do.
*Road Materials	Bromley U.D.C	H. T. Coles, Municipal Buildings, Taunton	do.
Water Supply to Bishop's Lydeard	Taunton R.D.C.	H. T. Wakeham, County Surveyor, Shire Hall	do.
Concrete Paving, Shire Hall, Hereford	Standing Joint Com.	Offices of the "Service Administratif"	Mar. 25
*Construction of New Museum for Egyptian Antiquities	Egyptian Government	do.	April 18
*Construction of Arabic Museum and Khedivial Library, Cairo	do.	A. Waterhouse & Son, 20, New Cavendish-street, W.	May 2
*Offices, Liverpool	Pearl Life Assurance Co. Lim.	Foster & Wood, 35, Parkstreet, Bristol	No date
Enlargement of Churchill Parochial School, near Bristol	Rev. S. P. Jose	W. McCulloch, c/o G. Hutton 72, Albion-street, Leeds	do.
Shoe Factory, Newtown, Leeds	L. Brooks	Butterworth & Duncan, Archt. 4, South Parade, Rochdale	do.
Twenty-two Cottages, Castleton	Rochdale Equitable Pioneers' Soc. Lim.	E. Isle Hubbard, Archt. Moorgate-st. Rotherham	do.
School and House, near Rotherham	Thurnscoe Sch. Board	J. M. Fawcett & Sons, Archt. 28, Albion-st. Leeds	do.
Six Houses, Upper Armley, Leeds	.....	A. D. Benyon, Rosalia, Carysfort-road, Boscombe	do.
House, Spa Estate, Boscombe, Bournemouth	.....	J. Haggas, Archt. North-street, Keighley	do.
Additions to Walk Mills, Keighley	.....	Jas. C. Wilson, Worsthorne Estate Offices, Todmorden-road, Burnley	do.
Cottages, Bankwell, Cornholme, near Todmorden	.....		do.

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv., vi., viii., x., *&* xix.

socket does not quite extend over this groove, leaving sufficient room for pouring in cement or grouting.

6,339.—GRINDSTONES: *R. Pollard and another.*—For applying water to a grindstone an adjustable water-trough is mounted in its proximity; and means, such as a lever or other suitable device, are used for lifting or lowering the trough.

11,470.—DOORS: *F. Kessler.*—A closing device for doors in which a circular rail or track is fixed to the floor, forming an inclined plane, up which a roller, carried on a block attached to the door, travels when the latter is opened. The hinges being such as will permit the door to be raised the required distance.

16,398.—WALL-PAPERS: *C. Deneys.*—Relates to the manufacture of pigments or lakes suitable for colouring wall-papers by means of artificial strontium carbonate obtainable from sodium carbonate and a soluble strontium salt, particularly those of acid coal-tar dyes.

24,063.—PAINTS: *J. Sellars.*—A protective covering for metal and other surfaces, being improvements in connexion with coverings specified in former patents, No. 1,457 and No. 5,291-95. Consists of a compound comprising resin, petroleum or similar oil, and creosote. Pulverised wood or similar material is fixed in the covering for retaining colouring matter when such is used.

NEW APPLICATIONS FOR LETTERS PATENT.

FEBRUARY 17.—3,526, T. Tubbs, Sash-frames for Sliding Pivoted Sashes, with Slotted Metal Weather-bar Attachments.—3,534, W. Inglis, Light Chimney-scaling Ladders, &c.—3,545, G. Vail, Draught-Preventers for Doors and Windows.—3,601, S. Hill and R. Hodges, Hydraulic Door-checks, &c.

FEBRUARY 18.—3,647, J. Strahlf, Saw-setting Device.—3,649, J. Tercey, Ventilating Stove Pipes.—3,669, A. Lely, Bolt for Doors.—3,694, H. Schwartzenhauer, Stonebore.

FEBRUARY 19.—3,735, A. Jones, Shutter-fastener.—3,744, J. Ayton, Baker's Oven.—3,747, T. Holcroft & Son, Limited, and A. Mould, Waste-preventing Flushing Apparatus.—3,751, J. Howarth, Saws for Cutting Stone.—3,748, A. Spence, Construction and Hanging of Heavy Bells.—3,772, H. Lombard, Door-stop.—3,789, W. Hazel, Building Bricks.—3,790, B. Falk, Clamp.—3,800, W. Thompson, Artificial Stone.—3,812, J. Gowland, Strainers or Protectors for Sink-pipes, Fall-pipes, &c.

FEBRUARY 20.—3,828, J. Connor, Hip and Valley Tile Angle-finder.—3,861 W. Raine and V. Wells, Paint-mixing Machines.—3,863, R. Kinsky, Roofing Tile.—3,880, R. Walker, Construction of Walls and Partitions, &c.

FEBRUARY 21.—3,940, J. Wilkie, Sliding Sash-windows.—3,972, S. Neffgen, Artificial Stone.—3,080, W. Youlten, Sliding Windows.—3,993, W. Williams, Artificial Stone for Building Purposes.—4,006, J. Martin, Screw Nails.—4,007, J. Martin, Screw-drivers.

FEBRUARY 22.—4,029, T. Elms, Joint for Drain, Gas, or Water-pipes, Gulleys, Traps, and Channel-pipes.—4,041, W. Johnson, Window-sashes.—4,044, A. Shackleton, Machine for Fixing Rain-pipes and Soil-pipes.—4,055, S. Bastow, Windows.—4,063, B. Wagstaff, Flushing Cisterns.—4,071, A. Boult, Slabs or Blocks for Building.

PROVISIONAL SPECIFICATIONS ACCEPTED.

21,356, E. Wonters, Decorative Panelling.—21,363, A. Tisch, Hinges for Shutters, &c.—659, H. Sutcliffe, Safety Syphon Valve-taps.—978, E. Edwards, Self-closing Door Hinges.—1,266, A. Sutton and W. Cotterill, Waste Water-closet Apparatus.—1,301, H. Dakin, Syphon Cisterns.—1,526, J. Williams, Water-closet Seat.—1,647, W. Schönheyden, Syphon Discharge Cisterns.—1,649, F. Reinisch, Water-closets.—1,756, A. Glover, Venetian Blinds.—1,785, S. Russell, Wastes of Baths, Lavatory Basins, &c.—1,923, H. Thomson, Syphon Cisterns for flushing Water-closets, &c.—2,100, G. Inman, Fastening Doors, &c.—2,223, F. Turner, Cement or Artificial Stone.—2,451, D. Froment, Treatment of Marble and similar stone.—2,499, G. Knowles, Ventilators and Air Inlets.—2,520, J. Dawber, Fireplaces.—2,605, J. Lewthwaite, Moulds and the Manufacture of Plastic Slabs or Roof Tiles therefrom.—2,633, G. Anderson, Stone-sawing Machinery.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

7,883, J. Carroll and W. Moore, Ridge Tiles.—9,825, T. Sabine, Sockets of Pipes for Drainage &c.—18,732, A. Malcolm, Kitchen Boiler Safety Test Cock.—21,293, F. Golby, Cement or Plaster Compound.—23,649, E. Fales, Grates.—1,504, M. Reutt, Nails.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

Feb. 14.—By WHITFIELD & SON (at Chirk).

Glyn Ceiriog, Denbigh.—Six cottages and land, 1a. 2r. 8p., f. £540

Feb. 20.—By BAXTER, PAYNE, & LEPPER (at Bromley)

Bromley, Kent.—1 to 11, Orchard-place, f., r. 114*l.* 8*s.* £1,200

By FULLER, MOON, & FULLER (at Croydon).

Croydon.—27 and 29, Boston-rd., f., r. 26*l.* 230

Tatsfield, Surrey.—"Tangland Lodge" and 2 acres, f. 450

Paynesfield-rd., a block of land, 4¼ a., f. 200

By R. SNELL (at Axminster).

Axminster, Devon.—"Weycroft Farm," 64½ a., f. 2,600

By SIMMONS & SONS (at Devizes).

Melksham, Wilts.—Four enclosures of land, 14 a. 2 r. 37 p., f. 520

By H. J. BLISS & SONS.

Stoke Newington.—78, Park-st., u.t. 52¾ yrs., g.r. 2*l.* 1s. 3d., r. 26*l.* 230

Wapping.—83 and 85, High-st., f., r. 69*l.* 18s. 650

Homerton.—35 and 37, Hassett-rd., u.t. 64 yrs., g.r. 8*l.* 425

Bethnal Green.—48 to 56 (even), Middleton-st., u.t. 40½ yrs., g.r. 20*l.*, r. 166*l.* 8s. 1,400

10, 11 and 12, Knottisford-st., u.t. 7 yrs., g.r. 12*l.* 12s. 75

By C. R. CROSS (at Uxbridge-rd.).

Uxbridge-rd.—3, Camden Gardens, u.t. 63½ yrs., g.r. 9*l.*, r. 46*l.* 405

Shepherd's Bush.—2 and 4, Richmond Gardens, u.t. 67½ yrs., g.r. 18*l.*, r. 79*l.* 665

44 and 45, Woodstock-rd., u.t. 66½ yrs., g.r. 14*l.* 545

Feb. 21.—By BAKER & SONS.

Limehouse.—81, Three Colt-st., u.t. 77 yrs., g.r. 7*l.* 10s., r. 40*l.* 225

By DOLMAN & PEARCE.

Hampstead.—48, Upper Park-rd., u.t. 55 yrs., g.r. 10*l.* 600

Feb. 22.—By W. J. PEIRCE & THORPE (at Northampton).

Little Houghton, Northants.—"Clifford Hill Mills," 17 a. 3r. 15 p., f. 4,550

Feb. 24.—By WEATHERALL & GREEN.

Bow.—3 and 5, Rosebank-rd., f., r. 63*l.* 1,020

43, St. Stephen's-rd., f., r. 33*l.* 450

Saxon-rd., "The Saxon Confectionery Works," f., r. 45*l.* 815

Saxon-rd., freehold stabling premises, r. 20*l.* 400

Peckham.—202 to 212 (even), 220 and 222, Commercial-rd., u.t. 19 yrs., g.r. 74*l.* 5s., r. 223*l.* 12s. 385

By J. STOPHER.

Aldgate.—17, 18, 23, and 4, Hutchinson-av., f. ... 1,480

By J. DAWSON & SON.

Weybridge, Surrey.—Portmore-pk., "St. Margaret's," f. 3,250

By R. BURR & SONS.

Ball's Pond.—1, 2, 5, 6, 7, and 8, Hawthorn-st., u.t. 58 yrs., g.r. 25*l.* 4s. 1,190

By E. W. HARRIS.

Penge.—129, Oakfield-road, f., r. 25*l.* 330

Beckenham.—53 to 56, Arthur-rd, u.t. 70 yrs., g.r. 8*l.* 280

41, Kent Hourse-rd., u.t. 87 yrs., g.r. 5*l.*, r. 32*l.* 320

88, Barnmead-rd., u.t. 75½ yrs., g.r. 5*l.*, r. 30*l.* ... 300

By J. REEVE & SON (at Margate).

Margate, Kent.—3, Churchfields, f., r. 30*l.* 350

1 and 2, Magdala Villas, f., e.r. 90*l.* 1,045

By H. DUKE & SON (at Dorchester).

Dorchester, Dorset.—Dorset County School Estate, 10 a., f. 3,150

By E. J. CASTIGLIONE (at Carlisle).

Aglionby, Cumberland.—House, 2 cottages, and several enclosures of land, 30 a. 0 r. 5 p., f. ... 2,000

Feb. 25.—By BEAN, BURNETT & ELDRIDGE.

Camden Town.—1, Camden-sq., u.t. 41¼ yrs., g.r. 2*l.* 1,090

By J. H. BULMER.

Rotherhithe.—73, Clarence-st., f., r. 18*l.* 4s. 200

By WALFORD & WILSHIN.

Greenwich.—67, Thames-st., f., r. 25*l.* 300

By RUTLEY, SON, & VINE.

Euston-rd.—73, Stanhope-st., u.t. 25 yrs., g.r. 8*l.*, e.r. 50*l.* 360

Camden Town —4, Wilmot-pl., u.t. 48 yrs., g.r. 5*l.* 430

Shoreditch.—Boundary-st., "Kossuth's Buildings," f., r. 429*l.* 2,700

PRICES CURRENT OF MATERIALS.

TIMBER.			TIMBER *continued*.		
Greenheart, B.G.	ton	8/0/0	0/0/0	Satin, Porto Rico	0/0/7	0/1/6
Teak, E.I.	load	20/0/0	16/0/0	Walnut, Italian	0/0/3	0/0/7
Sequoia, U.S. ft. cu		1/10	2/0			
Ash, Canada	load	3/5/0	4/10/0	**METALS**		
Birch, do.		2/15/0	4/15/0	Iron—Pig, in Scotland	ton	2/7/7½	0/0/0
Elm, do.		4/0/0	5/5/0	Bar, Welsh, in London		5/12/6	5/15/0
Fir, Dantsic, &c.		2/0/0	3/10/0	Do. do. at works in Wales		5/2/6	5/5/0
Oak, do.		2/14/0	3/5/0	Do. Staffordshire, in London		6/0/0	6/10/0
Canada		6/10/0	8/0/0	COPPER—British cake and ingot		50/0/0	50/10/0
Pine, Canada	red	0/0/0	0/0/0	Best selected		51/0/0	51/10/0
Do. Yellow		2/15/0	5/0/0	Sheets, strong		57/0/0	0/0/0
Lath, Dantsic, fath		4/10/0	5/10/0	Chili bars		46/0/0	46/5/0
St. Petersburg		5/0/0	6/10/0	YELLOW M'TAL	lb	0/0/7-16	0/0/4½
Wainscot, Riga, &c., log		2/15/0	5/0/0	LEAD—Pig, Spanish	ton	11/7/6	0/0/0
Odessa, crown		2/15/0	5/0/0	English com. brands		11/8/9	11/10/0
Deals, Finland 2nd & 1st std	100	7/0/0	8/10/0	Sheet, English, 6 lbs. per sq. ft. and upwards		12/10/0	0/0/0
Do. 4th & 3rd		7/0/0	8/0/0	Pipe		12/10/0	0/0/0
Do. Riga		7/0/0	8/0/0	ZINC—English sheet	ton	18/5/0	18/10/0
St. Petersburg, 1st yellow		9/10/0	12/0/0	Vieille Montagne		18/15/0	0/0/0
Do. 2nd yellow		7/10/0	9/0/0	TIN—Straits		60/10/0	61/0/0
Do. white		8/0/0	9/10/0	Australian		61/2/6	61/12/6
Swedish		7/0/0	15/10/0	English Ingots		64/10/0	65/0/0
White Sea		7/15/0	14/15/0	Banca		61/15/0	61/17/6
Canada, Pine 1st		21/0/0	25/0/0	Billiton		61/5/0	61/10/0
Do. do. 2nd		16/0/0	17/0/0				
Do. do. 3rd, &c.		8/0/0	10/0/0	**OILS.**			
Do. Spruce, 1st		9/0/0	10/10/0	Linseed	ton	18 17 6	19/12 6
Do. do. 3rd and 2nd		6/15/0	7/10/0	Cocoanut, Cochin		27/0/0	0/0/0
New Brunswick		6/0/0	7/0/0	Do. Ceylon		22/15/0	0/0/0
Battens, all kinds		5/0/0	20/0/0	Palm, Lagos		22/0/0	0/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6	0/14/6	Rapeseed, English pale		24 10/0	25/0/0
Do. 2nd		0/6/6	0/11/6	Do. brown		23/0/0	23/10/0
Other qualities		0/4/6	0/7/6	Cottonseed ref.		16/10/0	17/5/0
Cedar, Cuba	ft.	/4	/4½	Oleine		19/10/0	20/15/0
Honduras, &c.		/3½	/4	Lubricating, U.S.		6/6/0	9/6/0
Mahogany, Cuba		/3½	/6	Do. black		4/9/0	6/6/0
St. Domingo, cargo av.		/3½	1/0	TAR—Stockholm	barrel	1/0/0	0/3/0
Mexican do. do.		/4	/4½	Archangel		0/14/6	0/15/0
Tobasco do. do.		/4½	/6				
Honduras do.		/4½	/6				
Box, Turkey	ton	4/0/0	15/0/0				
Rose, Rio		7/0/0	16/0/0				
Bahia		6/0/0	15/0/0				
Satin St. Domingo		0/-/7	0/1/0				

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender: and we cannot publish lists in which the accepted Tender is below £100, unless in some exceptional cases and for special reasons.]

BARMOUTH.—For masonry dam, bye wash, gauge basin, and other works at Llyn Bodlyn, in connexion with the Barmouth Waterworks. Mr. T. Blackburn, C.E., Barmouth, North Wales:—

Contract No. 1.

Thos. Lant	£6,950	Williams & Jones, Barmouth*	£3,440
J. Phenix	5,597		
T. E. Jones	3,791		

Contract No. 2.

High Pressure Filters, Filter House, completion of service reservoir, and other works at Eithinfynydd:—

J. Rothwell	£1,743	T. E. Jones, Dyffryn*	£843
J. Phenix	1,017	* Accepted conditionally.	

BARMOUTH.—For new road, sewers, &c., on the Cors-y-Gedol and Marine Hotels Company, Limited, Estate:—

Owen Owens	£356	D. E. Davies, Barmouth	£255
T. R. Bishop	290	* Accepted.	

BARNOLDSWICK.—For the execution of paving works, Well-house-street, for the Urban District Council. Mr. Tom Biker, Town Surveyor, Barnoldswick. Quantities by Surveyor:—

S. Whittam	£695 10 0	E. Elliss	£578 4 0
F. Lancaster & Co.	645 19 0	W. Brigg	563 0 0
Jno. Duckett	644 5 0	Ed. Smith, Barnoldswick*	518 14 0
J. & M. Hawley	617 0 0	* Accepted.	
J. Atkinson	614 5 0		

BARNSLEY.—Accepted for the execution of sewerage works for the Hoyland Nether Urban District Council. Contract No. 1. Mr. Wm. Farrington, C.E., Town Hall, Hoyland Nether, Barnsley:—
Mr. Frank Eyre, Hillsbro', Sheffield £2,837
[Eighteen tendered.]

BLAENGARW (Wales).—For forming roads, surface drains, &c., for the Pwlcarn Building Club. Mr. C. T. Evans, surveyor, 8, Queen-street, Cardiff. Quantities by the architect:—

Hatherley & Carr	£1,135 0 0	Barnes, Chaplin & Co	£724 9 10
Batchelor & Snowden	857 9 8	E. H. Page	685 11 13
B. Thomas	834 2 6	S. Davies & Sons, Blaengarw*	595 0 0
Thos. Davies	811 15 2	* Accepted.	600 0 0

BRIDLINGTON QUAY.—For the erection of People's Palace. Mr. J. Earnshaw, architect, Wellington-road, Bridlington Quay. Quantities by Mr. J. Watson:—

J. Rennard	£12,227 0 0	F. Pattison	£8,800 0 0
Colley & Levitt	9,950 0 0	R. Bailey, Bridlington Quay*	8,797 10 4
G. Scales	8,899 17 6	J. H. Vickers & Co.	8,65 5 0 0

*Accepted after alterations.

CORK.—For the erection of two villa residences, Western-road. Mr. D. J. Coakley, architect, 1, Charlotte Quay, Cork:—

Not including Plumbing.

M. Galvin	£1,172	Terence O'Flynn	£920
Anthony Gaul	987		

Including Plumbing.

Edward Fitzgerald (accepted) £940
[All of Cork.]

DUNOON (N.B.).—For the extension of water-supply works for the Commissioners. Mr. C. J. M. Mackintosh, C.E., Burgh Surveyor, Dunoon:—

	Water extensions.	Drainage extensions.
Wm. Simpson, Jun., Bonhill*	£628 0 2	£793 6 5
Hugh Hastie	494 16 0	824 8 8
Thos. Crawford & Son	506 11 8	848 17 6
Henderson & Duncan	637 4 0	852 13 3
Andrew Jackson	—	910 11 10
D. Waddell	757 0 0	890 3 10
Wm. R. Gall	526 11 10	914 5 6
Brown & Young	519 2 2	918 17 1
Thomas Kent	501 12 10	924 16 1
Peter Bow	671 14 4	935 15 4
Hugh Gibson	632 15 6	997 13 4
Wm. Pollock	743 8 0	1,002 13 3
R. Aitkenhead & Sons	651 18 3	1,024 8 11
J. Spittal	580 13 6	1,086 8 6
D. Messer & Co.	542 2 5	1,074 4 7
R. C. Brebner	—	1,136 5 0
George Butler	919 0 0	1,187 5 6
Jas. Watson	918 16 6	1,216 16 5
Hugh McDongall	—	1,274 4 2
Franklin Beattie	—	3,162 3 10
Michael Ward, Dunoon†	428 14 2	—
Archibald Millar & Son	445 10 4	—
J. McYeat	520 16 2	—

* Accepted. † Accepted.

HALIFAX.—Accepted for the formation and drainage of streets, Holywell Green. Messrs. C. F. L. Horsfall & Son, surveyors, Lord-street-chambers, Halifax:—
James Brook, Lindley Moor, Lindley, Huddersfield ..£955

HARROGATE.—Accepted for the erection of Wesleyan Chapel, Grove-road, for the trustees of the chapel. Mr. W. J. Morley, architect, Beulah-chambers, Harrogate. Quantities by the architect:—
Masonry.—Simpson Bros, Albany-villas, Harrogate .....
Joinery.—T. Linskill, Harrogate .....
Plumbing and Painting.—Varley & Roebuck, Thornton.. } £3,400
Plastering.—Laycock Bros., Harrogate .....
Slating.—Thornton Bros, Otley .....

HOYLAKE (Cheshire). — Accepted for the completion of council offices, and erection of public hall for the Urban District Council. Mr. T. W. Cubbon, architect, 54, Hamilton-street, Birkenhead. Quantities by the architect:—
Mr. H. W. Forde, Claughton-road, Birkenhead £3,484 10 *
[Architect's estimate, £3,500]

LANCASTER.—For the execution of water-supply works, Halton, for the Lunesdale Rural District Council. Mr. W. Harrison, C.E., 56, Grafton-street, Preston:—

William Gould, Brixey-street, Preston*	£292
Clay Cross Company, Chesterfield†	380

* Laying main. † Supplying pipes.

LOCKWOOD (Yorkshire).—For the extension to branch store at Lockwood, for the Huddersfield Industrial Society, Limited. Mr. J. Berry, architect, Huddersfield:—
Masons.—A. & T. Haigh, Golcar. .....
Joiners.—J. Sunderland & Sons, Lockwood. .....
Plumbers.—D. Taylor & Sons, Lockwood .....
Slaters and Plasterers.—T. Longbottom & Sons, Lockwood ..... } Total £293.
Concrete and Wood Block Flooring.—John Cooke, Little Royd, Huddersfield .....
Painters.—J. Preston & Sons, Albion-street, Huddersfield .....

LONDON.—For alterations and additions to No. 108, Lancaster Gate, W. Messrs. Mullett, Booker, & Co., surveyors. No quantities:—

Bartholomew & Co.	£1,147 6	Foxley & Co.	£969 10
Kinninmont & Sons	1,075 0	Parkinson & Son	849 19

LONDON.—For rebuilding No. 22, Throgmorton-street, for the Managers of the Stock Exchange. Mr. R. Langton Cole, architect:—

Higgs & Hill	£6,884	Colls & Sons	£5 877
W. Johnson & Co.	6,137	Killby & Gayford	5,540
G. Godson & Sons	6,109	E. Lawrance & Sons*	5 213
A. Bush & Son	5 998	* Accepted.	

LONDON.—For alterations of the Falcon public-house, Great College-street, N.W., for Mr. W. R. Burden. Mr. A. J. Perriam, architect and surveyor, 52, St. John's-villas, N.:—

Little & Senegal	£1,195	Blomfield & Evans	£1,008
Burman	1,183	Gould & Brand	1,001
Mark	1,149	Marchant & Hirst	993
Drew & Cadman	1,104	H. Wall	913
Perkins & Co.	1,040		

LONDON.—For alteration at No. 160, Stroud Green-road, for Mr. Hall. Mr. J. Wallis Chapman, architect, 11, Sutherland-avenue, W.:—

Foxley	£773 0	Paddison	£655 7
Lidstone	745 0	Marchant & Hirst *	639 0
		* Accepted.	

LONDON. — Accepted for erecting stables at High-street, Bishopsgate, for Mr. C. Loxley:—
Scowen £172 10 0

LONDON.—For the erection of a lodge and conveniences at Maryon Park, for the London County Council:—

G. Munday & Son	£1,036	E. Proctor	£935
W. Shurmur	954	H. Wells	912
H. Wall & Co.	948		

LONDON.—Accepted for the erection of ten pairs of villa residences in Ebbsfleet-road, and five shops in High-road, Cricklewood, for Messrs. G. Bridge & Co. Mr. J. Phoenix, architect, 75, Florence-road, Stroud Green, N.:—
Henry Neal £12,250

LONDON.—For pulling down and rebuilding Nos. 7 and 8, Gosfield-street, Langham-place, W. Messrs. Murray & Foster, architects, 7, John-street, Adelphi, W. Quantities by Messrs. Leaning & Sons:—

Scrivener & Co.	£2,004 0	J. Carmichael	£1,764 0
Gregory & Co.	1,997 0	Hilder and Edge	1,739 16
F. & H. F. Higgs	1,991 0	A. White & Co.	1,717 0
Warburton & Goldring	1,832 0		

LONDON.—For pulling down and rebuilding two cottages, Anthony-street, St. Georges-in-the-East:—

Hearle & Farrow	£826	A. White & Co.	£636
Calnan	731		

LONDON.—For pulling down and rebuilding Nos. 9 and 10, Gosfield-street, Langham-place, W. Mr. W. Hargreaves Raffles, architect, 9, Argyll-street, W. Quantities by Mr. Bernard Swinstead:—

F. & H. F. Higgs	£2,511	A. White & Co.	£2,260
Gregory & Co.	2,487	Warburton & Goldring	2,212
W. Smith	2,457	J. Carmichael	2,132
Scrivener & Co.	2,361	Hilder & Edge	2,103

MANSFIELD (Notts).—For sewering Bancroft-lane for the Corporation. Mr. R. Frank Vallance, Borough Surveyor, Mansfield:—

J. Greenwood	£304 8 6	James Bradley	£332 0 0
Jno. Hawley & Son	164 2 4	J. Tomlinson, Derby*	121 4 7
J. W. Fisher	156 2 0	* Accepted.	

MANSFIELD (Notts).—For the execution of road works, for the Corporation. Mr. R. F. Vallance, Borough Surveyor, Mansfield:—

Jno. Hawley & Son	£494 15 0	W. A. Pallance	£322 0 0
J. W. Fisher	350 0 0	James Bradley	305 0 0
John Greenwood	340 15 7	J. Tomlinson, Derby*	303 8 5
		* Accepted.	

MELTHAM (Yorks).—Accepted for the erection of council offices, Market-place, for the Urban District Council. Mr. William Carter, architect, Meltham. Quantities by architect:—

Masonry—J. Moorhouse & Sons, Golcar Brow, Meltham	£662	0 0
Joinery—J. M. Moorhouse, Mill Moor, Meltham	294	0 0
Slating—W. E. Jowett, John William-street, Huddersfield	59	0 0
Plastering—W. E. Jowett, John William-street, Huddersfield	65	0 0
Plumbing—Jno. W. Kaye, Greens End, Meltham	99	10 0
Concreting—Jas. Wilkinson & Sons, Helmet, Meltham	88	0 0
Painting—Edwin Hinchliff, Market-place, Meltham	9	10 0
Ironwork—James Kilburn, Mill Moor Foundry, Meltham	39	17 0

NEWTON ABBOT.—For an infirmary and lying-in wards at the Newton Abbot Workhouse. Mr. S. Segar, architect, Newton Abbot:—

Chinrhen	£11,000	Parker Bros.	£8,356
MacKellar	9,693	Horton & Co.	8,317
Richd. Yeo	8,950	F. A. Stacey	7,885
Lewis Bearne	8,498		

NORTHAMPTON.—For rebuilding Fish Inn, Fish-street, Northampton, for Messrs. P. Phipps & Co., Limited. Mr. F. W. Dorman, architect, Northampton. Quantities by the architect:—

R. Cosford	£2,953	H. Martin	£2,144
J. T. Wingrove	2,220	W. Heap	2,069
Green Bros.	2,185	E. Archer*	2,058
		* Accepted.	

NORTHAMPTON.—Accepted for additions to the "Paul Pry Inn," Walton, near Peterborough, for Messrs. P. Phipps & Co. Mr. F. W. Dorman, architect, Northampton. Quantities by the architect:—
H. Martin £294

NORTHAMPTON.—For additions to the north wing of St. Andrew's Hospital. Mr. Chas. Dorman, architect, 51, Abington-street, Northampton:—

R. Cosford	£8,500	H. Martin *	£8,100
G. S. Fisher	8,450	F. G. Sharman	7,778
A. P. Hawtin	8,300	Dunkley	6,865
Green Bros.	8,175	* Accepted.	

[All of Northampton.]

NOTTINGHAM.—For erecting two pairs of semi-detached houses, Egypt-road, New Basford. Mr. A. H. Goodall, architect, Market-street, Nottingham:—

J. Cooper	£1,327 0	H. Scott & Son	£1,196 0
W. Savage	1 228 0	Appleby & Lambert	1,193 0
J. Oscroft	1,265 0	F. Wartnaby	1,189 11
G. J. Mansell	1,253 9	W. Maule	1,178 0
T. Cuthbert	1,247 4	Clay & Cartledge	1,168 0
Lambert & Co.	1,247 0	G. T. Lovett	1,157 0
G. Wood	1,218 0	Hoyes & Boyfield, Nottingham*	1,150 0
J. Musson	1,215 0	* Accepted.	
Emerson & Franks	1,205 0		

NOTTINGHAM.—For the erection of school-buildings, Sycamore-road, for the School Board. Mr. A. H. Goodall, architect, Market-street, Nottingham. Quantities by architect:—

J. Cooper	£5,820 0 0	Lambert & Co.	£5,160 0
J. Hutchinson	5,632 17 0	G. T. Lovett	5,103 0 0
E. Hind	5,538 0 0	J. G. Thomas	5,102 12 6
A. B. Clarke	5,500 0 0	F. Evans	5,100 0 0
T. Barlow	5,450 0 0	J. Oscroft	5,058 0 0
H. Vickers	5,390 0 0	R. Fisher	5,096 0 0
Gilbert & Gabbitass	5,312 0 0	Appleby & Lambert	5,094 0 0
T. Cuthbert	5,291 0 0	G. A. Pillatt	5,075 0 0
Dennett & Ingle	5,200 0 0	F. Wartnaby	5,073 11 9
J. H. Vickers, Ltd.	5,195 0 0	W. Maule, Nottingham (accepted)	5,025 0 0
J. Hodson & Son	5,179 0 0		

PLYMOUTH.—For alterations to premises, corner of Old Town and Treville-street, for Mr. J. Butland. Mr. R. H. B. Neal, architect, Central Exchange, Plymouth. Quantities by the architect:—

Geo. Trevena	£1,151	Goad & Co.	£852
W. Trevena	1,111	S. Roberts	837
Tozer & Son	1,009	Blake	820
Kerswell	994	Wakeham Bros.	819
Matcham & Co.	984	Lethbridge & Son	782
Roach & Lovell	929	Lapthorn & Co.*	739
A. N. Coles	870	* Accepted.	

PLYMOUTH.—For the erection of warehouses for Messrs. Service & Co., Limited. Messrs. Keats & Coath Adams, architects, 34, Bedford-street, Plymouth. Quantities by the architects:—

P. Blowey	£2,657 0	J. Palmer	£1,830 12
Wakeham Bros.	2 049 0	S. Roberts	1 790 0
J. Goad	2,021 15	A. Andrews	1,725 0
Lethbridge & Son	1,873 0	W. Blake (accepted)	1,655 0

[All of Plymouth.]

PLYMOUTH.—For the erection of business premises, Ebrington-street. Mr. B. Priestley Shires, architect, Central Exchange, Plymouth:—

Plumbers' work excepted.

Chamberlain	£1,000 0	Paynter & Davy	£776 13
Lethbridge & Son	875 0	W. G. Goad	763 0
Andrews	850 0	Blake	737 0
Coles	825 0	Rogers	718 11
Turpin	820 0	J. Goad & Co.	709 0
Tozer & Son	792 0	Palmer*	700 0

Plumbing.—W. N. Elliott £75 12 9

* Provisionally accepted.
[All of Plymouth].

RIPON.—For the execution of sewage works (Contract No. 2), for the Corporation. Quantities by Messrs. Preston & Johnson, engineers, Bradford:—

A. Braithwaite	£332 9 11	Waddington Bros.	£281 15 0
H. Wilson	326 8 6	F. U. Simpson	276 5
E. Kellett	321 3 7	Walker & Co., Keighley (accepted)	272 0
Park & Smith	314 1 0		

PORT TALBOT (Wales).—For the erection of two hospitals, &c. (four contracts), for the Margam Urban District Council. Mr. Bishop, surveyor, Taibach, Port Talbot :—

For Cottage and foundations of Hospital.

M. Cox	£1,120	J. Nicholas Port Talbot *	£595
T. Jenkins	1,020		

For Hospitals.

Baker & Co.	£1,272	W. Harbrow	£1,020
Watkins & Co.	1,252	J. Nicholas	946
T. Balmer	1,131	R. C. Harris	876
T. Dixon	1,092	T. Hawkins, Ashford, Middlesex *	800
Blakeley & Co.	1,048		

* Accepted.

ST. ANNE'S-ON-SEA (Lancs.).—For levelling, &c., St. David's-road South and St. Alban's-road, for the Urban District Council. Mr. George Hodgkinson, C.E., St. Anne's-on-the Sea :—

St. David's-road.

J. Farrell	£841 1 3	W. Shepherd	£730 0 0
L. H. Moorsom & Co.	775 5 11	F. Harrop, St. Anne's-on-the-Sea*	703 14 10
S. Johnson	766 10 8	E. Hindle	702 15 0
R. Greaves	764 2 9		

[Surveyor's estimate, £784 8s. 8d.].

St. Alban's-road.

J. Farrell	£616 3 7	S. Johnson	£553 11 4
R. Greaves	578 13 2	F. Harrop	549 10 10
L. H. Moorsom & Co.	567 18 8	W. Shepherd, Rochdale*	538 0 0

[Surveyor's estimate, £564 3s. 10d.].

* Accepted.

SALTASH (Cornwall).—For the erection of two houses. Mr. B. Priestley Shires, architect, Central Exchange, Plymouth :—

Blowey	£1,300	Palmer	£1,033
Pearse & Sons	1,280	Blake	997
Tozer & Son	1,275	Paynter & Davy	990
Lethbridge & Son	1,250	Mutton	920
W. G. Goad	1,075	Coles, Stonehouse, Devon*	890
J. Goad & Co.	1,050		

* Provisionally accepted.

SKELMANTHORPE.—For new stores at Skelmanthorpe, for the Skelmanthorpe Industrial Society, Limited. Mr. J. Berry, architect, Huddersfield :—

Masonry.—Wilson Haigh, Skelmanthorpe ..
Joinery.—George Taylor, Shelley ..
Plumbing.—Armitage & Thornton, Skelmanthorpe ..
Slating.—W. E. Jowett, Huddersfield ..
Plastering.—A. Jessop & Son, Shepley ..
Painting.—J. W. Jessop, Kirkburton ..
Concreting.—John Cooke, Little Royd, Huddersfield ..

Total, £1,220

SURBITON.—For the execution of sewerage works, South Bank, Cadogan, and Grove-roads, for the Urban District Council. Mr. Samuel Mather, C.E., Victoria-road, Surbiton :—

Jones & Fields	£2,569 8 1	J. Jackson	£1,315 0 0
H. Lee	2,000 13 5	S. Atkins	1,265 6 6
S. Hudson	1,557 12 1	J. C. Trueman	1,265 0 0
S. Kavanagh	1,488 5 2	A. S. Catley	1,235 0 0
Lee & Sons	1,465 9 11	D. H. Porter	1,157 0 0
W. Adamson	1,453 0 0	Killingback & Co.	1,101 4 8
Free & Sons	1,424 0 0		

[Surveyor's estimate, £1,129 11s. 7d.]

STOKENCHURCH (Oxon).—For the erection of Primitive Methodist Chapel, &c. Mr. Colborne, architect, Swindon :—

T. Axtell	£1,979 0 0	G. Smith	1,111 0 0
Walden & Cox	1,361 0 0	W. Siarcy	970 0 0
J. Kirby	1,300 0 0	R. Hamilton	945 0 0
G. H. Wheeler	1,250 0 0	G. Syred, Stokenchurch*	915 0 0
H. Harris	1,121 10 0		

* Accepted.

WATFORD.—For the construction of about four miles of intercepting sewers, with necessary manholes, &c., for the Watford Urban District Council. Mr. D. Waterhouse, Engineer to the Council :—

Kellet	£9,615	Bell	£7,261
Bentley	8,742	Cooke & Co.	7,245
Judge	8,220	Cunliffe	7,226
Bloomfield	8,198	Rutter	7,020
Jackson	8,022	Siddons & Freeman	7,000
Adams	7,821	Peareth	6,970
Hipwell	7,685	Shellborne	6,660
Dickson	7,599	Dupont, Watford*	6,589
Catley	7,500		

* Accepted.

WEDNESBURY.—For widening the bridge over the Birmingham Canal, Holyhead-road, Moseley, for the Corporation. Mr. E. M. Scott, Borough Surveyor, Town Hall, Wednesbury.

Contract No. 1.

Patent Shaft & Axle Tree Co., Limited.	£176 0 0	Thomas Woodhall	£174 5 0
		Jesse Tildesley	164 0 0
Heenan & Froude	189 5 6	A. J. Ellis, Reading*	130 0 0

Contract No. 2.

H. Teece & Co.	£103 0 0	Jacob Biggs	£98 0 0
George Trentham	98 16 6	George Law, Kidderminster*	95 0 0

* Accepted.

WATFORD.— or constructing about 52 chains of silicated stone-pipe sewers, with manholes, lamp-holes, and other incidental fittings relating thereto, in extending the system of sewers in the parish of Bushey, for the Watford Rural District Council. Mr. George Heath, Surveyor to the Council :—

Killingback & Co.	£1,3 0 0	J. Trueman	£985 0 0
T. Adams	1,320 0 0	J. Jackson	925 0 0
T. Free & Son	1,240 0 0	G. R. Mann	761 8 10
J. Dixon	1,132 0 0	F. Dupont, Watford *	735 0 0

* Accepted.

TO CORRESPONDENTS.

H. C.—J. W. B. (amounts should have been stated).

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

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Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

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AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

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BATH,
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
The attention of Architects is specially invited to the durability and beautiful COLOUR of this material. Quarries well opened. Quick despatch guaranteed. Stonework delivered and fixed complete. Samples and estimates free. Address, The Ham Hill Stone Co., Norton, Stoke-under-Ham, Somerset. London Agent: Mr. E. A. Williams, 16, Craven-st., Strand, W.C. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

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INK-PHOTO PROCESS,
4 & 5, East Harding-street,
Fetter-Lane, E.C. [Advt

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SLATE MERCHANT,
SLATER and TILER.
ESTIMATES GIVEN FOR
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To be Executed by Contract in any part of ENGLAND.
Penrhyn - Bangor,
Oakeley - Palmerston,
And other description of Slates ready for immediate delivery to any Railway Station.
Applications for Prices, &c., to
BETHNAL GREEN SLATE WORKS,
BETHNAL GREEN, LONDON, E.

THE
French Asphalte
COMPANY,
Suffolk House, Cannon-street, E.C.
SUPPLY THE BEST MATERIAL AND WORKMANSHIP FOR BUILDINGS,
DAMP COURSES, AREAS, ROOFS, WASH-HOUSE AND DAIRY FLOORS, &c., &c.
This Asphalte was chosen to be laid at Sandringham, on the new General Post Office, and other important buildings.

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ZINC AND COPPER ROOFING.
F. BRABY & CO.
LONDON. ◆◆ LIVERPOOL. ◆◆ GLASGOW.
352 to 364, Euston-road, N.W. 6 and 8, Hatton Garden. 47 and 49, St. Enoch-square.
VIEILLE MONTAGNE SOLE MANUFACTURING AGENTS.
NO SOLDER. NO EXTERNAL FASTENINGS.
Particulars on Application. *Chief Offices: Fitzroy Works, EUSTON ROAD, LONDON, N.W.*

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DETAIL: FRONT OF CHURCH OF ST. GILLES.

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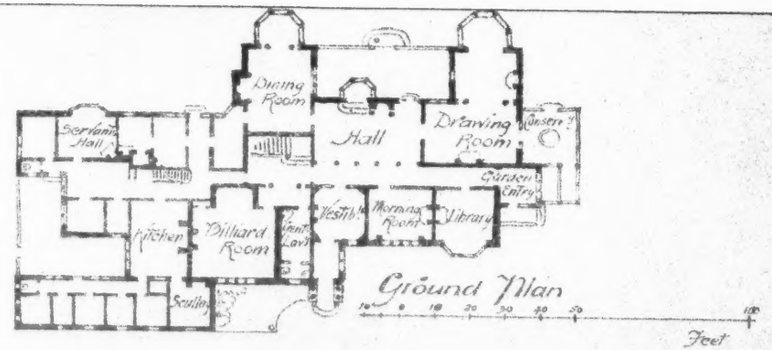
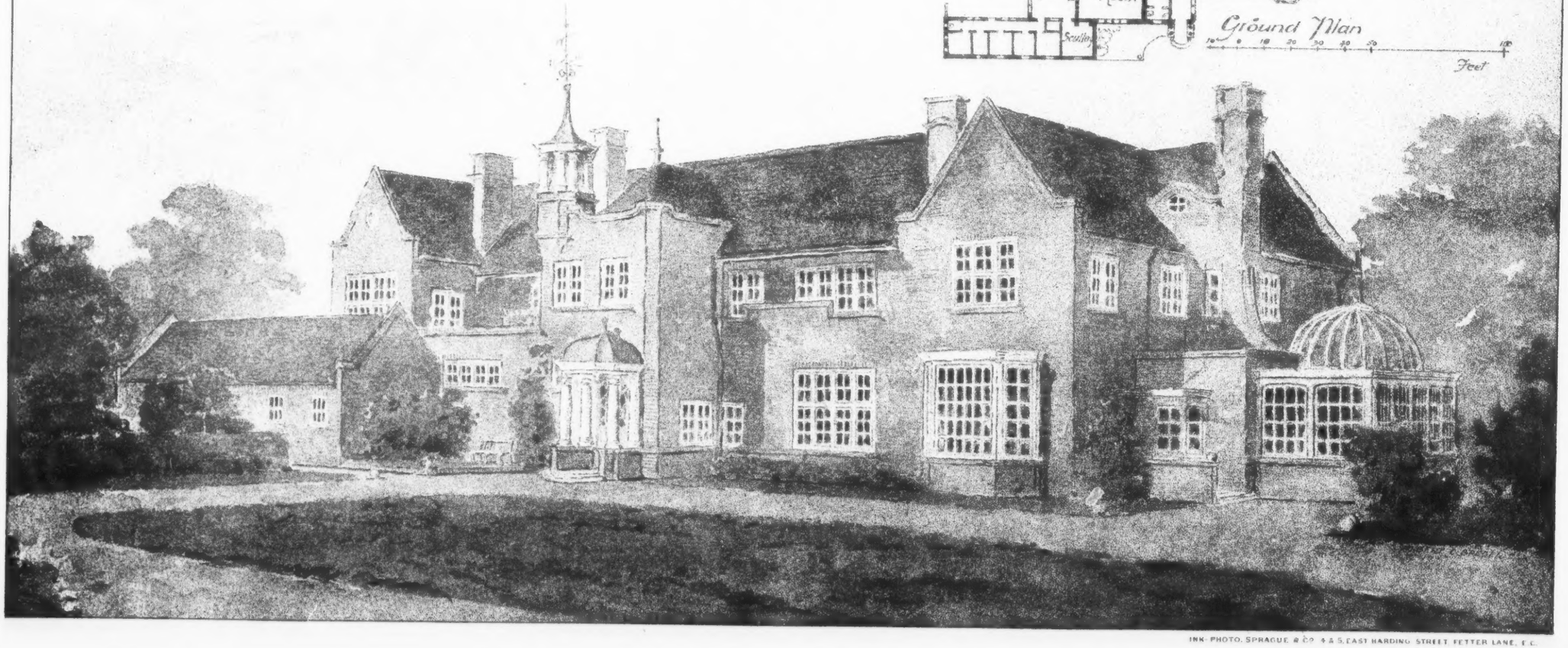
DETAIL: FRONT OF CHURCH OF ST. GILLES.

A COUNTRY HOUSE

Albert C. Bradley · Architect





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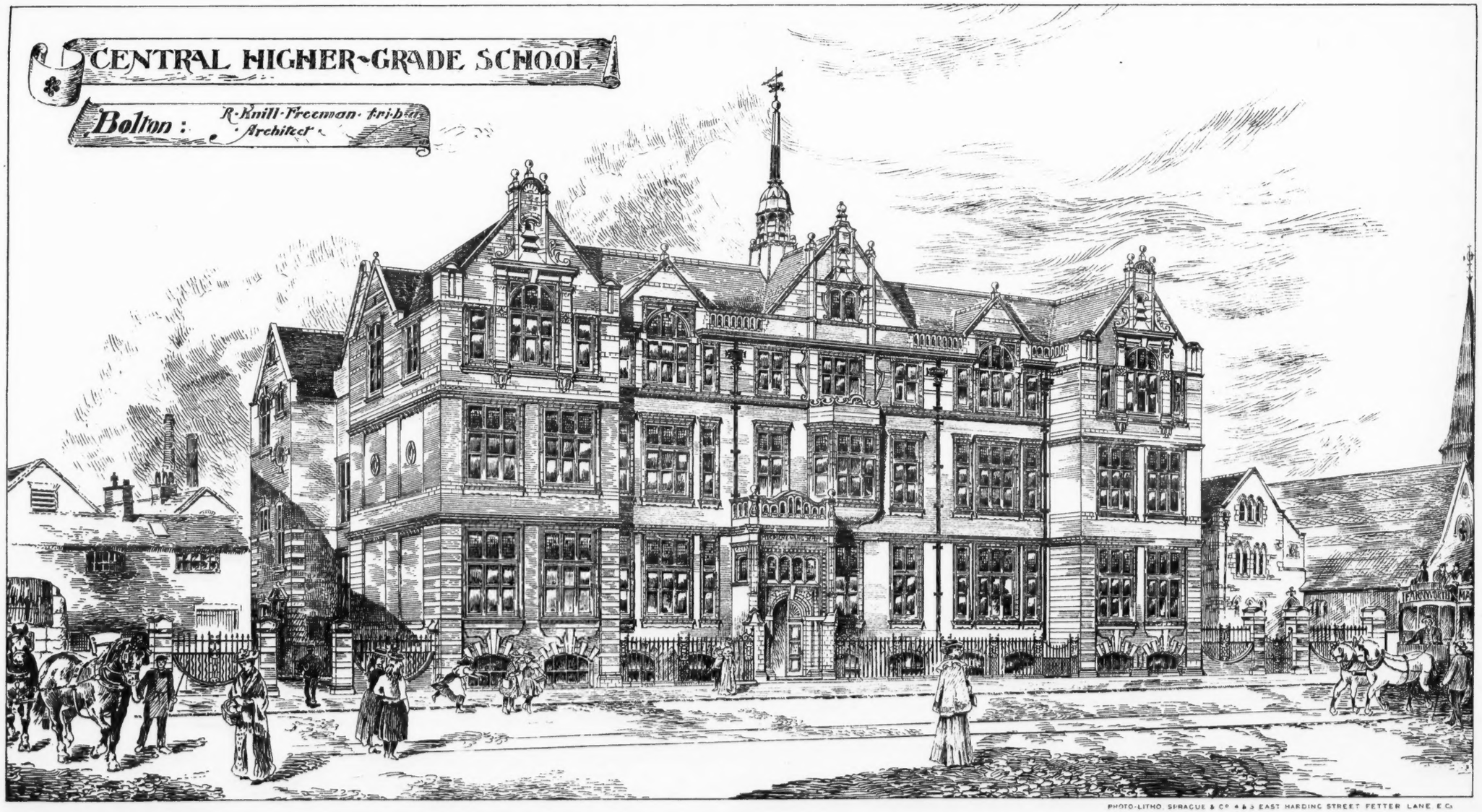
CENTRAL HIGHER-GRADE SCHOOL

Bolton: R. Knill Freeman, F.R.I.B.A., Architect.



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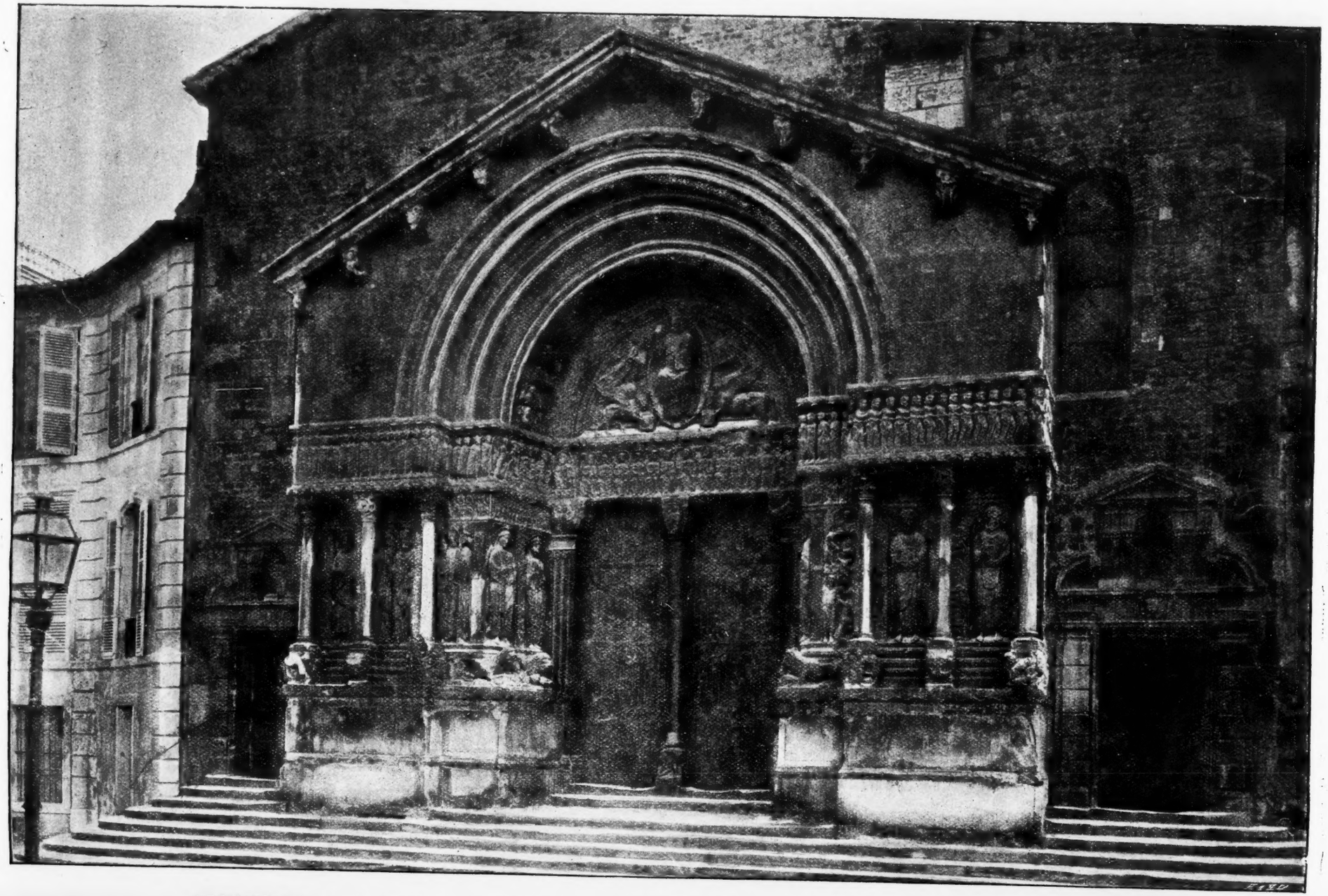

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FRONT OF ST. TROPHIME, ARLES.

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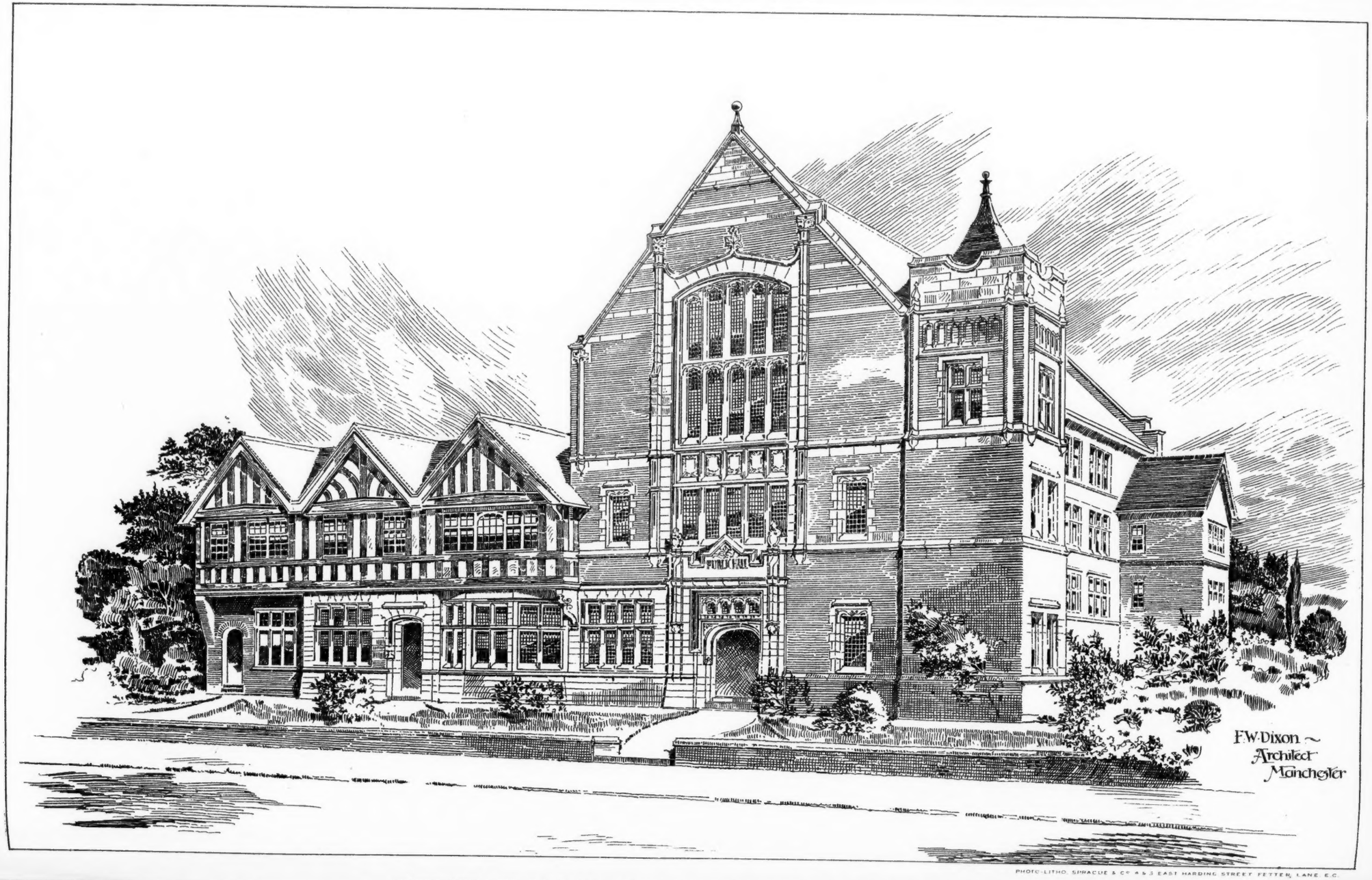

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INSTITUTE AND CAFÉ AT WORKS, AINTREE.—Mr. F. W. Dixon, Architect

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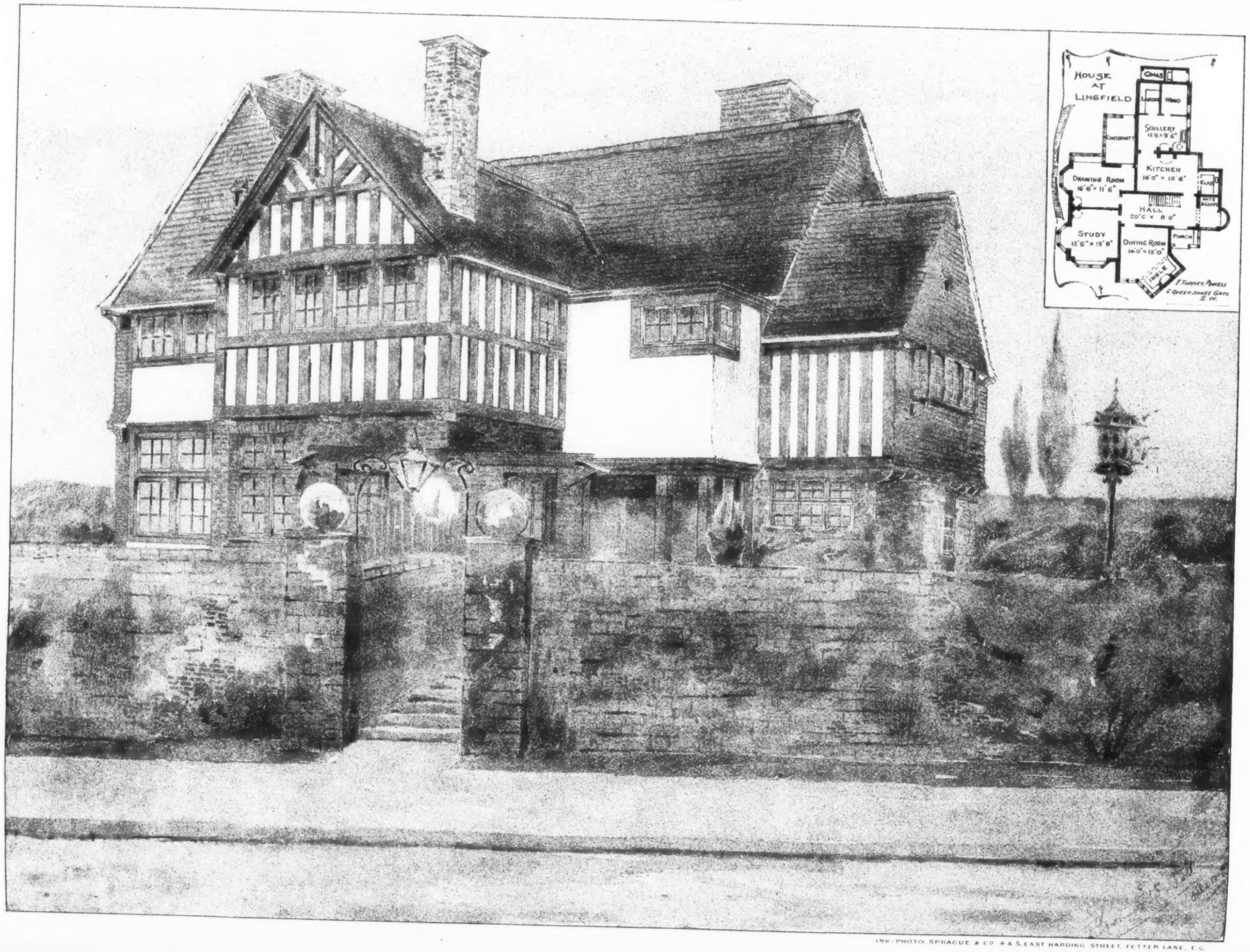

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HOUSE BY THE RACE-COURSE, LINGFIELD.—Mr. E. Turner Powell, Architect.

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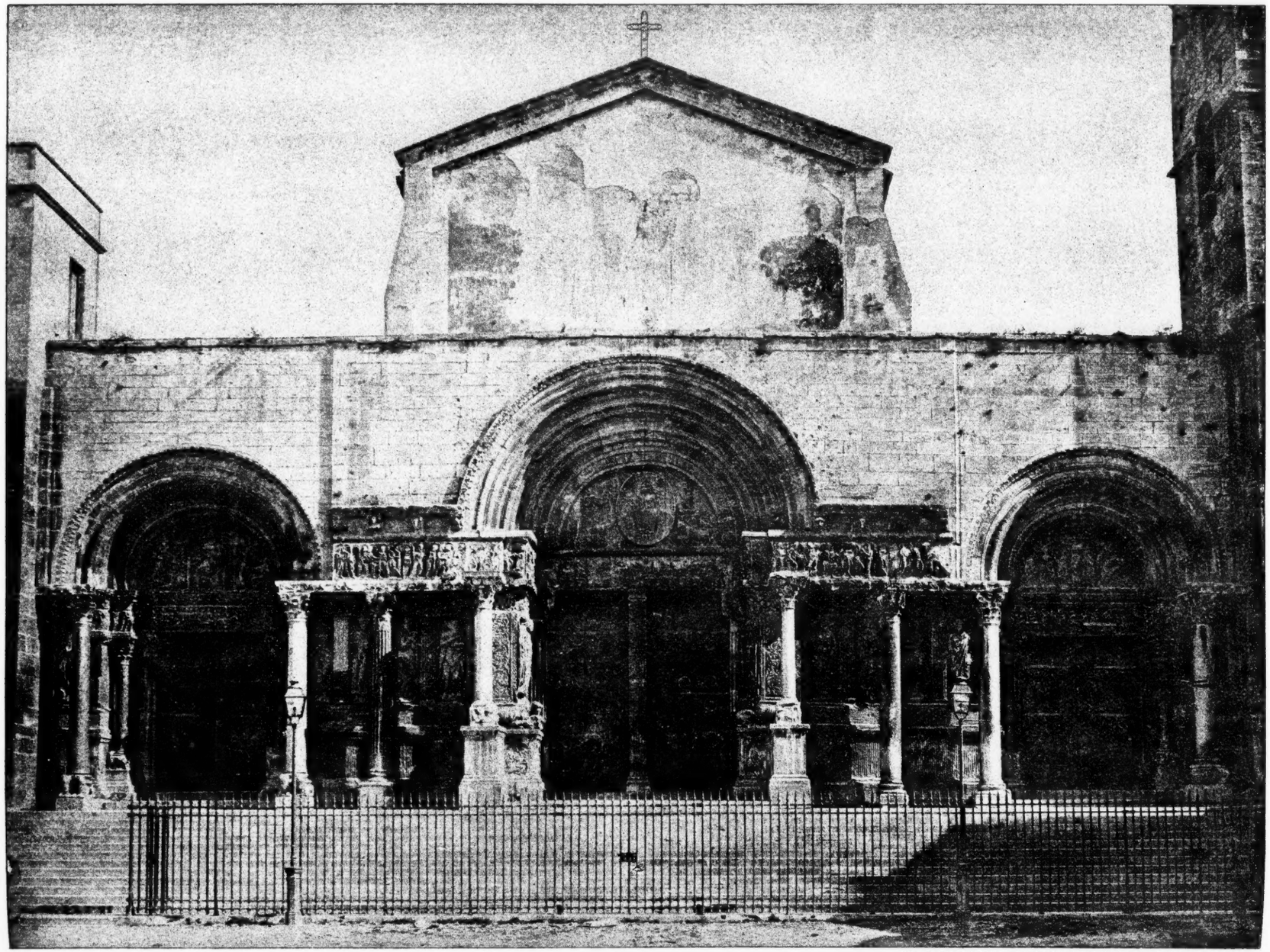

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